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Volume II, Part 2
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River Corridor Baseline Risk Assessment

Volume II:
Human Health Risk Assessment

For External Review

United States
Department of Energy

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December 2010

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Report Title	Document Number
100-B Area Technical Baseline Report	WHC-SD-EN-TI-220, Rev. 0
100-D Area Technical Baseline Report	WHC-SD-EN-TI-181, Rev. 0
100-F Reactor Site Technical Baseline Report Including Operable Units 100-FR-1 and 100-FR-2	BHI-00031, Rev. 0
100-H Area Technical Baseline Report	BHI-00127, Rev. 0
100-IU-6 Operable Unit Technical Baseline Report	BHI-00146, Rev. 0
100-K Area Technical Baseline Report	WHC-SD-EN-TI-239, Rev. 0
100-N Area Technical Baseline Report	WHC-SD-EN-TI-251, Rev. 0
300-FF-2 Operable Unit Technical Baseline Report	BHI-00012, Rev. 0
White Bluffs, 100-IU-2 Operable Unit Technical Baseline Report	BHI-00448, Rev. 00

Table 2-2. River Corridor Source Work Plan Reports.

Report Title	Document Number
Remedial Investigation/Feasibility Study Work Plan for the 100-BC-1 Operable Unit, Hanford Site, Richland, Washington	DOE/RL-90-07, Rev. 0
Remedial Investigation/Feasibility Study Work Plan for the 100-BC-2 Operable Unit, Hanford Site, Richland, Washington	DOE/RL-91-07, Rev. 0
RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-KR-1 Operable Unit, Hanford Site, Richland, Washington	DOE/RL-90-20, Rev. 0
RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-NR-1 Operable Unit, Hanford Site, Richland, Washington	DOE/RL-90-22, Rev. 0
RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-DR-1 Operable Unit, Hanford Site, Richland, Washington	DOE/RL-89-09, Rev. 0
RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-HR-1 Operable Unit, Hanford Site, Richland, Washington	DOE/RL-88-35, Rev. 0
RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-HR-2 Operable Unit, Hanford Site, Richland, Washington	DOE/RL-93-20, Rev. 0
Remedial Investigation/Feasibility Study Work Plan for the 100-FR-1 Operable Unit, Hanford Site, Richland, Washington	DOE/RL-90-33, Rev. 0

Table 2-3. Limited Field Investigation Reports.

Report Title	Document Number
Limited Field Investigation for the 100-BC-1 Operable Unit	DOE/RL-93-06, Rev. 0
Limited Field Investigation for the 100-HR-1 Operable Unit,	DOE/RL-93-51, Rev. 0
Limited Field Investigation for the 100-BC-2 Operable Unit	DOE/RL-94-42, Rev. 0
RCRA Facility Investigation/Corrective Measures Study Work Plan for the 100-DR-2 Operable Unit	DOE/RL-93-46, Rev. 2
Limited Field Investigation Report for the 100-DR-2 Operable Unit	DOE/RL-94-73, Rev. 0
Limited Field Investigation Report for the 100-FR-1 Operable Unit	DOE/RL-93-82, Rev. 0
Limited Field Investigation for the 100-HR-2 Operable Unit	DOE/RL-94-53, Rev. 0
Limited Field Investigation Report for the 100-KR-1 Operable Unit	DOE/RL-93-78, Rev. 0
Limited Field Investigation Report for the 100-NR-1 Operable Unit	DOE/RL-93-80, Rev. 0
Limited Field Investigation Report for the 100-NR-2 Operable Unit	DOE/RL-93-81, Rev. 0
1301-N and 1325-N Liquid Waste Disposal Facilities Limited Field Investigation Report	DOE/RL-96-11, Rev. 0
Limited Field Investigation Report for the 300-FF-2 Operable Unit	DOE/RL-96-42, Rev. 0

Table 2-4. Qualitative Risk Assessment Reports.

Report Title	Document Number
Focused Feasibility Study for the 300-FF-2 Operable Unit	DOE/RL-99-40, Rev. 0
Phase III Feasibility Study Report for the 300-FF-1 Operable Unit	DOE/RL-94-49, Rev. 0
Qualitative Risk Assessment for the 100-BC-1 Source Operable Unit	WHC-SD-EN-RA-003, Rev. 0
Qualitative Risk Assessment for the 100-KR-1 Source Operable Unit	WHC-SD-EN-RA-009, Rev. 0
Qualitative Risk Assessment for the 100-NR-1 Source Operable Unit	BHI-00054, Rev. 0
Qualitative Risk Assessment for the 100-DR-1 Source Operable Unit	WHC-SD-EN-RA-005, Rev. 0
Qualitative Risk Assessment for the 100-HR-1 Source Operable Unit	WHC-SD-EN-RA-004, Rev. 0
Qualitative Risk Assessment for the 100-FR-1 Source Operable Unit	BHI-00053, Rev. 0

Table 2-5. Records of Decision in the River Corridor.

Record of Decision	Comments
Interim Action Record of Decision for the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units, Hanford Site, Benton County, Washington (EPA 1995)	This IAROD addressed 40 wastes sites contaminated by radioactive liquid effluents.
Amendment to the Record of Decision for the 100-BC-1, 100-DR-1, and 100-HR-1 Operable Units, Hanford Site, Benton County, Washington (EPA 1997)	This amendment to EPA (1995) selected the "remove, treat, dispose" (RTD) interim action remedy for an additional 34 soil sites. Additional proximity sites have been added to the ROD via letter agreements.
Record of Decision for the 100-NR-1 and 100-NR-2 Operable Units, Hanford Site, Benton County, Washington (EPA 1999b)	This IAROD selected the RTD remedy for 78 waste sites within the 100-N Area.
Record of Decision for the 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 Operable Units, Hanford Site, Benton County, Washington (EPA 1999a)	This IAROD was intended to address all 100 Area "remaining" waste sites: i.e., all 100 Area sites not covered by the 1995 ROD (EPA 1995) and 1997 ROD Amendment (EPA 1997), with the exception of the 100 Area solid waste burial grounds and 100-N Area.
Record of Decision for the 100-BC-1, 100-BC-2, 100-DR-1, 100-DR-2, 100-FR-2, 100-HR-2, 100-KR-2 Operable Units (EPA 2000)	This IAROD selected the RTD remedy for 45 solid waste burial grounds in the 100 Area.
Record of Decision for the 300-FF-1 and 300-FF-5 Operable Units, Hanford Site, Benton County, Washington (EPA 1996b)	This ROD selected the RTD remedy for several waste sites in the 300-FF-1 OU including major liquid process waste disposal sites, one major solid waste burial ground, and three small landfills. This ROD also selected an interim action remedy for contaminated groundwater in the 300-FF-5 OU underlying the 300 Area.
Record of Decision for the 300-FF-2 Operable Unit, Hanford Site, Benton County, Washington (EPA 2001)	This IAROD selected the RTD remedy for 56 waste sites within the 300 Area including 40 waste sites in the 300 Area main industrial complex, 7 waste sites outside the main complex, 7 general content solid waste burial grounds, and 2 solid waste burial grounds containing transuranic-contaminated material.
Record of Decision for the 100-HR-3 and 100-KR-4 Operable Units, Hanford Site, Benton County, Washington (EPA 1996a)	This IAROD selected a pump-and-treat technology intended to mitigate ecological risk arising from movement of chromium-contaminated groundwater into the Columbia River.
Interim Action Record of Decision for the 100-KR-2 Operable Unit K Basins, Hanford Site, Benton County, Washington (EPA 1999c)	This IAROD selected the RTD remedy for the K Basins located in the 105-KE and 105-KW Reactor facilities in the 100 Area.
Interim Action Record of Decision for the 100-NR-1 and 100-NR-2 Operable Units, Hanford Site, Benton County, Washington (EPA 1999b)	This IAROD selected the RTD remedy for several waste sites in the 100-NR-1 OU. This ROD also selected an interim action remedy for contaminated groundwater in the 100-NR-2 OU underlying the 100-N Area.

EPA = U.S. Environmental Protection Agency
IAROD = interim action record of decision
OU = operable unit
ROD = record of decision
RTD = remove, treat, and dispose

Table 2-6. Summary of Waste Site Reclassification Categories.

Category	Description (Rev. 0, pre-2007)	Description (Rev. 1, 2007 to Present)
Rejected	Site is not a waste management unit and there is no evidence of actual or potential hazardous substance release.	Site does not require remediation under CERCLA, RCRA corrective action, or other cleanup standards based on qualitative information.
No Action	Waste management unit does not require action under RCRA corrective action, CERCLA, or other regulatory authority.	Site does not require further remedial action under CERCLA, RCRA corrective action, or other cleanup standards based on assessment of quantitative data collected for site.
Interim Closed Out	Waste management unit now meets interim cleanup standards or other interim regulatory closure requirements.	Due to actions taken, waste management unit meets cleanup standards specified in IAROD.
Closed Out	Waste management unit now meets cleanup standards or other regulatory closure requirements.	Due to actions taken, waste management unit meets applicable cleanup standards and closure requirements.

CERCLA = *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
IAROD = interim action record of decision
RCRA = *Resource Conservation and Recovery Act of 1976*

Table 2-7. Current Status of Reactor Facilities in the River Corridor.

Reactor Facility	D&D Status	Milestone Date	5-Year Surveillance Date(s)
105-B	Historic preservation	TBD	--
105-C	ISS complete	9/1998	12/2002, 7/2008
105-D	ISS complete	9/2004	11/2009
105-DR	ISS complete	1/2003	12/2007
105-F	ISS complete	1/2004	8/2008
105-H	ISS complete	10/2005	10/2010
105-KE	ISS in progress	7/2014	--
105-KW	ISS in progress	TBD	--
105-N	ISS in progress	9/2012	--
FFTF	Final disposition being evaluated	--	--

-- = not applicable
D&D = Decontamination & Decommissioning
FFTF = Fast Flux Test Facility
ISS = interim safe storage
TBD = to be determined per Tri-Party Agreement Milestone M-93-00

Table 2-8. Current Condition of Waste Sites Evaluated in the RCBRA. (12 Pages)

Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
100-B/C Decision Area											
100-B-11	115-B/C Caisson Site, 115-BC Sump, 115-BC Drywell, 115-B Tank, 115-B/C Caisson Valve Pit	RLW	--	Sr-90, Sb, As, Ba, B, Cd, Cr (total), Co, Cu, Pb, Mn, Mo, V, Zn	--	1.2	None	0.78 / $<1 \times 10^{-5}$	Mix of native vegetation and bare ground	No Action	7/15/2004
100-B-14:3	Process Sewer Feeder Pipelines from 182-B and 183-B, West Process Sewer Pipelines	NRLW	--	Sb, As, Ba, Be, B, Cd, Cr (total), Cr-VI, Co, Cu, Pb, Mn, Hg, Mo, Ni, Se, Ag, V, Zn, sulfate, PCBs, SVOCs	--	--	None	-- / 2×10^{-7}	Mix of native vegetation, revegetated, and bare ground	No Action	6/4/2004
100-B-14:5	Sodium Dichromate and Sodium Silicate Pipelines	NRLW	--	Sb, As, Ba, Be, B, Cd, Cr (total), Co, Cu, Pb, Mn, Mo, Ni, Ag, V, Zn	--	--	None	-- / $<1 \times 10^{-5}$	Mix of native vegetation, revegetated, and bare ground	No Action	6/3/2004
100-B-14:6	Process Sewer Feeder Pipeline from 184-B and 184-B Ash Slurry Line	NRLW	--	Sb, As, Ba, Be, B, Cd, Cr (total), Cr-VI, Co, Cu, Pb, Mn, Hg, Mo, Ni, Ag, V, Zn, Aroclor-1260	--	--	None	-- / $<3 \times 10^{-7}$	Mix of native vegetation and revegetated	No Action	6/4/2004
100-B-14:7	Process Sewer Feeder Pipelines from 185-B and 190-B, 185-B/190-B Sump/Pipelines	NRLW	--	Sb, As, Ba, Be, B, Cd, Cr (total), Cr-VI, Co, Cu, Pb, Mn, Hg, Mo, Ni, Ag, Zn	--	--	None	-- / 3×10^{-8}	Mix of native vegetation and revegetated	No Action	6/3/2004
100-B-16	Utility Poles and Fixtures Debris Pile	NRSW	--	As, Ba, Cd, Cr (total),Pb, Hg, Ag, SVOCs, Aroclor-1260	Surface only	927.5	1,697	-- / $<3 \times 10^{-7}$	Mix of native vegetation and bare ground	Interim Closed Out	6/29/2005
100-B-5	Effluent Vent Disposal Trench, 116-B-9, 105-B Effluent Vent Trench	RLW	--	Am-241, Ce-137, Co-60, Eu-152, Eu-154, Eu-155, Pu-238, Pu-239/240, Sr-90, U-238, Pb, Hg, Cr (total), Cr-VI	8.5	4,450	16,320	1.83 / $<1 \times 10^{-5}$	Revegetated	Interim Closed Out	9/11/2003
100-B-8:1	100-B Area South Effluent Pipelines	RLW	--	Am-241, Ce-137, Co-60, Eu-152, Eu-154, Eu-155, Pu-238, Pu-239/240, Sr-90, U-238, Pb, Hg, Cr (total), Cr-VI	8.5	48,260	79,339	1.59 / 6×10^{-7}	Mix of revegetated and bare ground	Interim Closed Out	4/20/2004
100-B-8:2	100-B Area North Effluent Pipelines	RLW	--	Am-241, Ce-137, Co-60, Eu-152, Eu-154, Eu-155, Pu-238, Pu-239/240, Sr-90, U-238, Pb, Hg, Cr (total), Cr-VI	7.5	135,000	269,742	5.93 / 9×10^{-7}	Revegetated	Interim Closed Out	2/17/2004
100-C-3	119-C Sample Building French Drain, 119-C French Drain	RLW	--	Ce-137, Co-60, Eu-152, Eu-154, Eu-155, Cr-VI	3	94	49	1.37 / $<1 \times 10^{-5}$	Bare ground	Interim Closed Out	7/28/2003
100-C-9:3	183-C Clearwell Pipelines	NRLW	--	Sb, As, Ba, Be, B, Cd, Cr (total), Cr-VI, Co, Cu, Pb, Mn, Hg, Mo, Ni, Ag, V, Zn, SVOCs	--	--	None	-- / $<1 \times 10^{-5}$	Bare ground	No Action	6/3/2004
116-B-1	107-B Liquid Waste Disposal Trench, Process Effluent Trench	RLW	$>1.0 \times 10^{-2}$	Am-241, Ce-137, Co-60, Eu-152, Eu-154, Ni-63, Pu-238, Pu-239/240, Sr-90, U-238, Pb, Hg, Cr (total), Cr-VI	4.6	1,863.3	43,033	5.0 / 3 × 10-9	Revegetated	Interim Closed Out	12/8/2003
116-B-10	108-B Dry Well, Quench Tank	RLW	$>1.0 \times 10^{-4}$	Ce-137, Co-60, Eu-152, Eu-154, Sr-90, U-233/234, U-238, Hg, Cr-VI	2.44	153.36	692	1.27 / 3.8×10^{-8}	Bare ground	Interim Closed Out	2/24/2000
116-B-11	107-B Retention Basin, 116-B-11 Retention Basin	RLW	$>1.0 \times 10^{-2}$	Am-241, Ce-137, Co-60, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, U-238, Pb, Hg, Cr (total), Cr-VI	5	14,000	165,178	13.6 / 4.2×10^{-9}	Revegetated	Interim Closed Out	12/8/1999

Table 2-8. Current Condition of Waste Sites Evaluated in the RCBRA. (12 Pages)

Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
116-B-12	117-B Crib, 117-B Seal Pit Crib	RLW	$>1.0 \times 10^{-4}$	Sr-90, U-238, Cr-VI	4.6	521	8,696	ND / $<1 \times 10^{-5}$	Revegetated	Interim Closed Out	2/24/2000
116-B-13	107-B South Sludge Trench, 116-B-8, 107-B #2 Grave, Basin Sludge Burial Pit	RSW	$>1.0 \times 10^{-4}$	Am-241, Ce-137, Co-60, Eu-152, Eu-154, Eu-155, Pu-238, Pu-239/240, Sr-90, U-238, Pb, Hg, Cr (total), Cr-VI	4.3	620	6,340	2.4 / 7.5×10^{-11}	Revegetated	Interim Closed Out	7/22/1999
116-B-14	107-B North Sludge Trench, 107-B Liquid Waste Disposal Trench No. 1, 116-B-2, 107-B #1 Grave	RSW	$>1.0 \times 10^{-4}$	Am-241, Ce-137, Co-60, Eu-152, Eu-154, Eu-155, Pu-238, Pu-239/240, Sr-90, U-238, Pb, Hg, Cr (total), Cr-VI	6	132	3,795	10.9 / 6.3×10^{-10}	Revegetated	Interim Closed Out	7/22/1999
116-B-15	105-B Fuel Storage Basin Cleanout Percolation Pit, 105-B Fuel Storage Discharge Pond, 105-B Pond	RLW	--	Ni-63, Ra-228, U-234/235, U-238, As, Ba, Cr (total), Cr-VI, Pb, Hg, Se	--	2,484	None	10.9 / $<1 \times 10^{-5}$	No current information	No Action	12/8/2003
116-B-2	105-B Storage Basin Trench, B-Storage Basin Crib	RLW	5×10^{-3}	Cs-137, Eu-152, Eu-154, Sr-90, U-233/234, U-238, Cr-VI	4.9	997	9,393	3.6 / 2.9×10^{-9}	Mix of native vegetation and revegetated	Interim Closed Out	2/24/2000
116-B-3	105-B Pluto Crib	RLW	4×10^{-3}	Cs-137, Sr-90, U-233/234, Cr-VI	4.6	112	244	0.16 / $<1 \times 10^{-5}$	Revegetated	Interim Closed Out	2/24/2000
116-B-4	105-B Dummy Decontamination French Drain, 105-B Dummy Decontamination Disposal Crib	RLW	$>1.0 \times 10^{-2}$	Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Pu-239/240	4.6	1,062	8,700	1.04 / $<1 \times 10^{-5}$	Revegetated	Interim Closed Out	2/24/2000
116-B-6A	111-B Crib No. 1, 116-B-6-1	RLW	$>1.0 \times 10^{-4}$	Co-60, Cs-137, Sr-90, U-238, Cr-VI	4.6	604	5,072	10.8 / $<1 \times 10^{-5}$	Revegetated	Interim Closed Out	5/17/2000
116-B-6B	111-B Crib No. 2, 116-B-6-2	RLW	2×10^{-5}	Pb	3	78	263	-- / $<1 \times 10^{-5}$	Revegetated	Interim Closed Out	2/24/2000
116-B-7	1904-B-1 Outfall Structure, 1904-B1	RLW	--	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, H-3, U-234, U-235, U-238, Cr (total), Cr-VI, Hg, Pb	8.3	1,638	17,233	4.13 / 3.9×10^{-7}	Revegetated	Interim Closed Out	7/25/2002
116-B-9	104-B-2 French Drain	RLW	$>1.0 \times 10^{-4}$	Co-60, Cs-137, Eu-152, Sr-90	2.44	52	NA	ND / $<1 \times 10^{-5}$	Revegetated	Interim Closed Out	2/24/2000
116-C-1	107-C Liquid Waste Disposal Trench	RLW	$>1.0 \times 10^{-2}$	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, U-238, Cr (total), Cr-VI, Hg, Pb	5	11,116	97,515	8.2 / 9.6×10^{-8}	Revegetated	Interim Closed Out	1/21/1999
116-C-2A	105-C Pluto Crib, 116-C-2, 105-C Crib	RLW	--	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Pu-238, Pu-239/240, Sr-90, U-233/234, U-238, Cr-VI	9.15	1,688	15,939	14.9 / $<1 \times 10^{-5}$	Bare ground	Interim Closed Out	3/15/2000
116-C-5	116-C-5 Retention Basins, 107-C Retention Basins	RLW	$>1.0 \times 10^{-2}$	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, U-238, Cr (total), Cr-VI, Hg, Pb	4.6	30,806	224,709	14.6 / 6×10^{-10}	Revegetated	Interim Closed Out	12/8/1999
116-C-6	105-C Fuel Storage Basin Cleanout Percolation Pit, 105-C Pond	RLW	--	Am-241, Cs-137, Eu-152, Ni-63, Pu-239/240, Sr-90, Ra-228, U-233/234, U-235, U-238, As, Ba, Cr (total), Pb	--	2,172	NA	12.8 / $<1 \times 10^{-5}$	No current information	Interim Closed Out	12/8/2003

Table 2-8. Current Condition of Waste Sites Evaluated in the RCBRA. (12 Pages)

Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
118-B-10	Ball 3X Storage Vault	RSW	$>1.0 \times 10^{-4}$	Co-60, Ni-63	3.21	103	266	$2.79 / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	5/24/2004
118-B-3	Construction Burial Ground No. 2	RSW	--	Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, Cr (total), Cr-VI, Hg, Pb	4.6	4,804	9,525	$3.62 / 2 \times 10^{-7}$	Revegetated	Interim Closed Out	4/5/2005
118-B-4	105-B Spacer Burial Ground, 105-B Dummy Burial Ground	RSW	--	Co-60, Cr-VI	3.9	532	3,170	$0.53 / 1 \times 10^{-7}$	Bare ground	Interim Closed Out	5/24/2004
118-B-5	Ball 3X Burial Ground	RSW	$>1.0 \times 10^{-4}$	C-14, Co-60, Ni-63	4.8	753	5,046	$1.62 / <1 \times 10^{-5}$	Revegetated	Interim Closed Out	5/24/2004
118-B-9	104-B-1 Tritium Vault and 104-B-2 Tritium Laboratory, 104-B2 Storage Building	RSW	--	Sb, As, Ba, Be, B, Cd, Cr (total), Co, Cu, Pb, Mn, Hg, Mo, Ni, V, Zn	--	60	--	$-- / <1 \times 10^{-5}$	Bare ground	No Action	7/15/2004
118-C-2	105-C Ball Storage Tank, Ball 3X Storage Tank	RSW	--	Co-60, Ni-63	3.14	124	470.4	$0.41 / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	7/30/2004
118-C-4	105-C Horizontal Control Rod Storage Cave	RSW	--	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Pu-238, Pu-239/240, Sr-90, U-234, U-235, U-238, Ag, As, Ba, Cd, Cr (total), Cr-VI, Pb, Hg, Se	0.85	122	453	$0.52 / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	9/11/2003
128-B-2	100-B Burn Pit #2	NRSW	--	Ra-226, U-233/234, U-238, As, Ba, Be, B, Cd, Cr, Co, Cu, Pb, Mn, Hg, Mo, Ni, V, Zn, Aroclor-1254, SVOCs, 4,4'-DDE, endrin aldehyde, gamma-chlordane	3.5	1,004	12,696	$ND / 7.3 \times 10^{-7}$	Revegetated	Interim Closed Out	12/21/2005
128-C-1	100-C Burning Pit	NRSW	--	Sb, As, Ba, Be, B, Cd, Cr (total), Co, Cu, Pb, Li, Mn, Hg, Mo, Se, Ag, V, Zn, Aroclor-1254, Aroclor-1260, SVOCs	4	3,315	17,211	$-- / 5.9 \times 10^{-7}$	Revegetated	Interim Closed Out	8/10/2005
1607-B10	1607-B10 Septic Tank System, Sewage Disposal Field	NRLW	--	Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Pb, Cr (total), Cr-VI, Hg, Aroclor-1254, DDT	2.5	178	328	$1.13 / 1 \times 10^{-7}$	Revegetated	Interim Closed Out	7/29/2003
132-B-6	1904-B-2 Outfall Structure Site, 116-B-8, 1904-B2	RLW	--	See 116-B-7 (grouped for cleanup)	--	--	--	--	Revegetated	Interim Closed Out	7/25/2002
132-C-2	1904-C Outfall, 116-C-4	RLW	--	See 116-B-7 (grouped for cleanup)	--	--	--	--	Revegetated	Interim Closed Out	7/25/2002
1607-B11	1607-B11 Septic Tank System	NRLW	--	Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Pb, Cr-VI, bis(2-ethylhexyl)phthalte	3	136	131	$2.01 / 1 \times 10^{-8}$	Bare ground	Interim Closed Out	7/29/2003
1607-B7	1607-B7 Septic Tank System, 1607-B7 Sanitary Sewer System, 124-C-1	NRLW	--	Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Pb, Cr-VI, beta-1,2,3,4,5,6-hexachlorocyclohexane	3.5	369	198	$1.54 / 4 \times 10^{-9}$	Native vegetation	Interim Closed Out	7/27/2003
1607-B8	1607-B8 Septic Tank System, 124-C-2, 1607-B8 Sanitary Sewer System, Septic Tank & Disposal Field for 190-C Pumphouse	NRLW	--	Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Pb, Cr-VI, Aroclor-1254, DDT	2.5	255	361	$1.50 / 6 \times 10^{-7}$	No current information	Interim Closed Out	7/29/2003

Table 2-8. Current Condition of Waste Sites Evaluated in the RCBRA. (12 Pages)

Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
1607-B9	1607-B9 Septic Tank System, 1607-B9 Sanitary Sewer System, 124-C-3	NRLW	--	Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Pb, Cr-VI, Dieldrin	3.5	1,773	3,060	1.74 / 7 × 10^{-8}	Revegetated	Interim Closed Out	8/28/2003
600-232	100B Electrical Laydown Area	NRSW	--	As, Ba, Cd, Cr (total), Pb, Hg, Aroclor-1254, SVOCs, TPH	0.38	20,229	9,005	-- / 4.6 × 10^{-8}	Revegetated	Interim Closed Out	1/27/2005
600-233	Vertical Pipe Near 100B Electrical Laydown Area	NRLW	--	Ba, Be, B, Cd, Cr (total), Co, Cu, Pb, Mn, Ni, Se, V, Zn, SVOCs	0.5	133	150	-- / 2.2 × 10^{-6}	Revegetated	Interim Closed Out	12/8/2005
100-D/100-H Decision Area											
100-D-12	Sodium Dichromate / Acid Railcar and Truck Unloading Station and Associated French Drain, Undocumented Liquid Waste Site	NRLW	--	Cr-VI	2.4	203	34.5	-- / <1 × 10^{-5}	No current information	Interim Closed Out	10/23/2000
100-D-20	Sludge Trench #3, 107-D Sludge Trench #3, 107-D-3, 107-D3	RSW	--	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Pu-238, Pu-239/240, Sr-90, Cr-VI, Aroclor-1260	2.1	575	9,710	5.83 / <2 × 10^{-6}	Bare ground	Interim Closed Out	3/25/1999
100-D-21	Sludge Trench #2, 107-DR Sludge Trench #2, 107-D-2, 107-D2	RSW	--	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Pu-238, Pu-239/240, Sr-90, Cr-VI, Aroclor-1260	4.5	891	9,943	0.69 / 1.58 × 10^{-6}	Revegetated	Interim Closed Out	3/25/1999
100-D-22	Sludge Trench #1, 107-DR Sludge Trench #1, 107-D-1, 107-D1	RSW	--	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Pu-238, Pu-239/240, Sr-90, Cr-VI, lead, Aroclor-1260	4.8	340	9,710	2.57 / 1.9 × 10^{-6}	Revegetated	Interim Closed Out	3/25/1999
100-D-4	Sludge Trench #5, 107-DR Sludge Trench #5, 107-D-5, 107-D5	RSW	--	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Pu-238, Pu-239/240, Sr-90, Cr-VI, PCBs	2.9	630	1,678	1.74 / 2.11 × 10^{-6}	Revegetated	Interim Closed Out	3/25/1999
100-D-48:1	North Pipelines from 116-D-7 to the Outfalls	RLW	--	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Ni-63, Pu-239/240, Sr-90, U-233/234, U-238, Cr-VI, mercury	6	15,504	107,266	3.71 / 3.0 × 10^{-7}	Revegetated	Interim Closed Out	3/19/2001
100-D-48:2	West Pipelines from D Avenue to 116-D-7	RLW	--	Co-60, Cs-137, Eu-152, Eu-154, Sr-90, Pu-239/240, U-233/234, U-238 and Cr-VI	6	20,475	57,106	4.98 / 4 × 10^{-7}	Revegetated	Interim Closed Out	9/26/2000
100-D-48:3	Effluent Pipelines from D Avenue to 105-D Reactor	RLW	--	Co-60, Cs-137, Eu-152, Eu-154, Pu-239/240, Sr-90, U-233/234, U-238, Cr-VI	5.7	24,574	55,561	9.13 / 4.5 × 10^{-7}	Bare ground	Interim Closed Out	4/23/2001
100-D-48:4	Small Cooling Water Effluent Pipelines at 105-D Reactor	RLW	--	Co-60, Cs-137, Eu-152, Eu-154, Pu-239/240, Sr-90, U-238, Cr-VI	7	3,291	27,738	3.6 / 9 × 10^{-7}	Bare ground	Interim Closed Out	4/23/2001
100-D-49:2	East Pipelines from D Avenue to 116-DR-9	RLW	--	See 100-D-48:2 (grouped for cleanup)	--	--	--	--	Revegetated	Interim Closed Out	--
100-D-49:4	100-DR Effluent Pipelines Within About 60 Meters of the Reactor	RLW	--	Am-241, Ba-133, C-14, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, Tc-99, U-233/234, U-235, U-238, Cr-VI, Hg, Pb, PCBs	4.6	4,189	16,245	11.3 / 3 × 10^{-7}	Bare ground	Interim Closed Out	1/15/2004
100-D-52	105-D Downcomer Insulation Space Dry Well	RLW	--	Cs-137, Eu-152, U-233/234, U-238, Cr (total), Pb	7.6	415	199	0.84 / --	Bare ground	Interim Closed Out	1/8/2000

Table 2-8. Current Condition of Waste Sites Evaluated in the RCBRA. (12 Pages)

Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
116-D-1A	105-D Storage Basin Trench #1	RLW	$>1.0 \times 10^{-2}$	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Pu-239/240, Sr-90, U-238, Cr-VI	4.6	2,648	10,987	$4.2 / 2.9 \times 10^{-7}$	Bare ground	Interim Closed Out	3/1/2001
116-D-2	105-D Pluto Crib, 116-D-2A	RLW	8×10^{-3}	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Pu-238, Pu-239/240, Sr-90, U-233/234, U-238, Cr-VI	4.6	218	623.2	$1.6 / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	10/23/2000
116-D-4	108-D Crib #2	RLW	1.0×10^{-4}	U-238, Cr-VI	2.8	138	NA	$ND / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	10/23/2000
116-D-7	107-D Retention Basin, 107-D	RLW	$>1.0 \times 10^{-2}$	Am-241, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, Cr (total), Cr-VI, Pb, Hg	7.4	12,940	177,724	$3.57 / 6.2 \times 10^{-7}$	Revegetated	Interim Closed Out	8/15/2000
116-D-9	117-D Crib, 117-D Seal Pit Crib	RLW	$>1.0 \times 10^{-4}$	Sr-90, U-238, Cr-VI	5.5	598	7.3	$0.82 / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	3/19/2001
116-DR-1&2	116-DR-1&2, 107-DR Liquid Waste Disposal Trench #1, 107-DR Liquid Waste Disposal Trench #2, 116-DR-1, 116-DR-2	RLW	$>1.0 \times 10^{-2}$	Am-241, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, Cr-VI	5	9,730	82,768	$3.6 / <1 \times 10^{-5}$	Revegetated	Interim Closed Out	9/26/2000
116-DR-4	105-DR Pluto Crib	RLW	--	Cs-137, Co-60, Eu-152, Sr-90, Cr-VI	4.6	238	523	$1.10 / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	10/23/2000
116-DR-6	1608-DR Liquid Disposal Trench, Wash Pad Liquid Waste Site 3C	RLW	--	Cs-137, Co-60, Eu-152, Eu-154, Sr-90, U-238, Cr-VI	4.8	485	2,140	$3.36 / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	10/23/2000
116-DR-7	105-DR Inkwell Crib, 105-DR DR Ink Facility Tank	RLW	--	Cs-137, Co-60, Eu-152, Eu-154, Sr-90, U-233/234, U-238	4.8	251	59	$2.40 / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	9/26/2000
116-DR-9	107-DR Retention Basin, 107-DR	RLW	$>1.0 \times 10^{-2}$	Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, Cr-VI, PCBs	4.75	16,352	201,519	$11.0 / 4.8 \times 10^{-9}$	Revegetated	Interim Closed Out	1/6/2000
118-DR-2:2	105-DR Reactor Below-Grade Structures and Soil	RLW	--	See 100-D-49:4 (grouped for cleanup)	--	--	--	--	Bare ground	Interim Closed Out	1/15/2004
122-DR-1:2	122-DR-1 Area 2, Pre-Filter Exhaust Tunnel	RLW	--	Am-241, C-14, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, U-234, U-235, U-238, As, Ba, Cd, Cr (total), Cr-VI, Pb, Li, Hg, Se, Ag, Na	4.6	1,010	14,011	$1.20 / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	3/4/2004
1607-D2:1	Original 1607-D2 Tile Field, Eastern 1607-D2 Tile Field	RLW	--	Eu-152, U-235, U-238, Cr-VI, Pb, Hg, bis(2-ethylhexyl)phthalate, PCBs (total), Aroclor-1260	3.4	1,203	10,040	$ND / <1 \times 10^{-5}$	Revegetated	Interim Closed Out	3/25/1999
1607-D2:3	Septic Pipelines	NRLW	--	Cs-137, Co-60, Eu-152, Cr (total), Cr-VI, Hg, Pb	4.6	1,780	1,137	$2.1 / <1 \times 10^{-5}$	Revegetated	Interim Closed Out	9/26/2000
1607-D2:4	1607-D2 Septic Tank	NRLW	--	Eu-152, Cr (total), Hg, Pb, bis(2-ethylhexyl)phthalate	4.7	506	2,041	$0.26 / <1 \times 10^{-5}$	Revegetated	Interim Closed Out	11/23/1999

Table 2-8. Current Condition of Waste Sites Evaluated in the RCBRA. (12 Pages)

Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
1607-D4	1607-D4 Septic Tank and Drain Field, 124-D-4, 1607-D4 Sanitary Sewer System, 1607-D4 Septic Tank	NRLW	--	U-233/234, U-235, U-238, Sb, As, Ba, Be, B, Cd, Cr (total), Co, Cu, Pb, Mn, Hg, Mo, Ni, U (total), V, Zn, nitrate, sulfate, Aroclor-1254, bis(2-ethylhexyl)phthalate, di-n-butylphthalate	--	172	--	ND / 7.2×10^{-8}	Bare ground	Interim Closed Out	2/23/2006
100-H-17	116-H-2 Trench Overflow	RLW	--	Cs-137, Co-60, Eu-152, Eu-154, Pu-239/240, U-238, Sr-90, Cr-VI	2.6	6,240	19,920	3.86 / 2.2×10^{-7}	Bare ground	Interim Closed Out	3/1/2001
100-H-21	100-H Reactor Cooling Water Effluent Underground Pipelines	RLW	--	Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, U-238, As, Cr-VI, Pb	5.6	17,629	32,725	3.36 / 3.9×10^{-7}	Bare ground	Interim Closed Out	3/19/2001
100-H-24	151-H Electrical Facilities, 100-H-24 Substation, 151-H Substation	NRSW	--	PCBs	4.6	12,290	19,924	-- / 7.0×10^{-7}	Bare ground	Interim Closed Out	5/9/2001
100-H-5	107-H Retention Basin Sludge Burial Site, 107-H Buried Sludge Site, Sludge Disposal Trench, 107-H Grave	RSW	--	Co-60, Cs-137, Eu-152, Eu-154, Pu-238, Pu-239/240, Sr-90, Pb	5.1	3,308	23,525	1.73 / $<1 \times 10^{-5}$	Revegetated	Interim Closed Out	12/18/2000
116-H-1	107-H Liquid Waste Disposal Trench	RLW	$>1.0 \times 10^{-2}$	Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Pu-239/240, Sr-90, Cr-VI, and Pb	4.6	12,735	82,706	7.8 / 2×10^{-7}	Revegetated	Interim Closed Out	4/3/2001
116-H-7	107-H Retention Basin, 107-H	RLW	$>1.0 \times 10^{-2}$	Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, U-238, Cr-VI, Pb, Cr (total), Aroclor-1242, Aroclor-1260	4.8	23,660	218,130	3.49 / 6.0×10^{-7}	Bare ground	Interim Closed Out	7/24/2001
132-H-1	116-H Reactor Exhaust Stack Burial Site	RSW	$>1.0 \times 10^{-4}$	C-14, Cs-137, Co-60, Eu-152, H-3, Pu-239, Sr-90	--	580	None	0.075 / $<1 \times 10^{-5}$	Bare ground	Interim Closed Out	6/26/2007
1607-H2	1607-H2 Septic Tank and Associated Drain Field, Septic System, 1607-H2 Sanitary Sewer System, 124-H-2, 1607-H2 Septic Tank	NRLW	--	U-233/234, U-238, Cs-137, Cr-VI, Pb, Cr, Hg, Aroclor-1254	5.6	5,045	12,207	0.14 / 3×10^{-7}	Revegetated	Interim Closed Out	2/5/2001
1607-H4	1607-H4 Septic Tank and Associated Drain Field, 1607-H4 Sanitary Sewer System, 124-H-4, 1607-H4 Septic Tank; Septic System	NRLW	--	U-233/234, U-238, Cs-137, Cr-VI, Pb, fluoranthene, pyrene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene	3.6	161	2,078	0.22 / 2.6×10^{-6}	Revegetated	Interim Closed Out	2/26/2001
100-F/100-IU-2/100-IU-6 Decision Area											
100-F-2	Strontium Garden, PNL Ecological Study Strontium Garden	RSW	--	Cs-137, Sr-90	1.6	373	1,269	0.57 / $<1 \times 10^{-5}$	Bare ground	Interim Closed Out	1/29/2003
100-F-23	141-C Drywell	RLW	--	C-14, Cs-137, Co-60, Eu-152, Sr-90, Cr-VI	3.2	170	458	0.41 / $<1 \times 10^{-5}$	No current information	Interim Closed Out	8/14/2003
100-F-24	145-F Drywell	RLW	--	C-14, Cs-137, Co-60, Eu-152, Sr-90, Cr-VI	2.7	113	259	0.39 / $<1 \times 10^{-5}$	No current information	Interim Closed Out	8/12/2003

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Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
100-F-25	146-FR Drywells	RLW	--	C-14, Cs-137, Co-60, Eu-152, Eu-154, Ni-63, Sr-90, Hg, Cr-VI	4	243	809	1.05 / <1 × 10^{-5}	Revegetated	Interim Closed Out	8/14/2003
100-F-26:1	North Process Sewer Collection Pipelines	RLW	--	Cs-137, Co-60, K-40, Ra-226, Ra-228, Th-228, Th-232, Sb, As, Ba, Be, B, Cd, Cr (total), Cr-VI, Co, Cu, Pb, Ni, Mn, Mo, Hg, Ag, V, Zn, Aroclor-1254	--	--	--	0.26 / 3.3 × 10^{-7}	No current information	No Action	7/21/2005
100-F-26:2	Process Water Pipelines to the Aquatic Biology and Strontium Gardens	NRLW	--	As, Ba, Be, B, Cd, Cr (total), Cr-VI, Co, Cu, Pb, Mn, Mo, Ni, V, Zn, Aroclor-1254	--	--	--	-- / 2.1 × 10^{-7}	Mix of native vegetation, revegetated, and bare ground	No Action	5/26/2005
100-F-26:5	190-F Bypass Pipelines	NRLW	--	Cs-137, Sb, As, Ba, Be, B, Cd, Cr (total), Cr-VI, Co, Cu, Pb, Mn, Hg, Mo, Ni, Ag, V, Zn, Aroclor-1254, Aroclor-1260	--	--	--	ND / 1.3 × 10^{-7}	Bare ground	No Action	7/21/2005
100-F-26:7	Sodium Dichromate and Sodium Silicate Pipelines	NRLW	--	As, Ba, Be, B, Cr (total), Cr-VI, Co, Cu, Pb, Mn, Hg, Mo, Ni, V, Zn	--	--	--	-- / 4.0 × 10^{-7}	Bare ground	Interim Closed Out	5/4/2005
100-F-35	Soil Contamination Area inside the 105-F Exclusion Area	RSW	--	Am-241, Cs-137, Co-60, Eu-152, Eu-154, Pu-239/240, Sr-90, U-233/234, U-238, Cr-VI	0.9	51	75.4	4.26 / 2.5 × 10^{-7}	Bare ground	Interim Closed Out	6/16/2003
100-F-37	French Drain Discovered Near Hydrant F-2	NRLW	--	As, Ba, Cd, Cr (total), Pb, Hg, Bis(2-ethylhexyl)phthalate	--	1	--	-- / <1 × 10^{-5}	Bare ground	No Action	8/11/2004
100-F-38	Yellow Stained Soil Near Hydrant F-2	NRLW	--	Ra-226, As, Ba, Be, B, Cd, Cr (total), Cr-VI, Co, Cu, Pb, Mn, Mo, Ni, V, Zn, Aroclor-2360	0.9	600	5.4	ND / 9.7 × 10^{-7}	Bare ground	Interim Closed Out	3/13/2006
100-F-4	108-F Building 12-inch French Drain	RLW	--	Pu-238, Pu-239/240, Cr (total), Cr-VI	4.7	7	None	0.009 / 2.1 × 10^{-7}	Bare ground	Interim Closed Out	5/31/2001
100-F-7	Underground Fuel Tank - 1705-F Building	NRLW	--	As, Ba, Be, B, Cd, Cr (total), Co, Cu, Pb, Mn, Hg, Mo, Ni, V, Zn	--	4	--	-- / <1 × 10^{-5}	Revegetated	No Action	2/15/2005
100-F-9	French Drain at East End of 105-F Storage Room (Northeast Corner)	NRLW	--	As, Ba, Be, B, Cd, Cr (total), Co, Cu, Pb, Mn, Hg, Mo, Ni, V, Zn	--	3	--	-- / <1 × 10^{-5}	Bare ground	No Action	2/14/2005
116-F-1	Lewis Canal	RLW	>1.0 × 10^{-2}	C-14, Cs-137, Co-60, Eu-152, Eu-154, Cr-VI, As	4.5	24,820	77,696	5.61 / 7 × 10^{-7}	Revegetated	Interim Closed Out	11/3/2003
116-F-10	105-F Dummy Decontamination French Drain, 116-F-8, 105 Dummy/Perf Decontamination Crib, Perf Decontamination Drain	RLW	>1.0 × 10^{-2}	Cs-137, Co-60, Eu-152, U-238, Cr (total), Cr-VI	4.4	195	848	4.66 / 2.04 × 10^{-7}	Bare ground	Interim Closed Out	6/14/2003
116-F-11	105-F Cushion Corridor French Drain	RLW	3 × 10^{-4}	C-14, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Ni-63, Sr-90, Cr-VI	4.6	--	--	2.25 / <1 × 10^{-5}	Bare ground	Interim Closed Out	9/15/2003
116-F-14	107-F Retention Basin, 107-F	RLW	>1.0 × 10^{-2}	C-14, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Ni-63, Sr-90, Cr (total), Cr-VI, Co	4.6	20,039	212,015	12.7 / 5.55 × 10^{-7}	Revegetated	Interim Closed Out	7/12/2002

Table 2-8. Current Condition of Waste Sites Evaluated in the RCBRA. (12 Pages)

Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
116-F-2	107-F Liquid Waste Disposal Trench	RLW	$>1.0 \times 10^{-2}$	C-14, Cs-137, Co-60, Eu-152, Eu-154, Cr-VI	4.6	15,352	113,007	$3.54 / 7.62 \times 10^{-7}$	Revegetated	Interim Closed Out	3/12/2003
116-F-3	105-F Storage Basin Trench	RLW	$>1.0 \times 10^{-2}$	Eu-152, Eu-154, Cr-VI	4.7	843	5,205	$2.01 / 3.5 \times 10^{-7}$	Bare ground	Interim Closed Out	6/16/2003
116-F-4	105-F Pluto Crib	RLW	$>1.0 \times 10^{-2}$	Am-241, Cs-137, Co-60, Eu-152, Eu-154, Pu-239/240, Sr-90, U-233/234, U-238	5.5	37	700	$1.90 / <1 \times 10^{-5}$	Revegetated	Interim Closed Out	11/8/2001
116-F-5	Ball Washer Crib	RLW	2×10^{-5}	Cs-137, Co-60	--	7	--	$0.71 / <1 \times 10^{-5}$	Revegetated	Interim Closed Out	8/16/2001
116-F-6	1608-F Liquid Waste Disposal Trench, 105-F Cooling Water Trench	RLW	$>1.0 \times 10^{-2}$	Cs-137, Co-60, Eu-152, Eu-154, Sr-90, Cr-VI	5.1	4,949	32,156	$5.81 / 2.52 \times 10^{-7}$	Bare ground	Interim Closed Out	11/3/2003
116-F-7	117-F Crib and Pipeline, 116-F-7 Seal Pit Water Crib and Pipeline	RLW	--	Cs-137, Sb, As, Ba, Be, B, Cd, Cr (total), Cr-VI, Co, Cu, Pb, Mn, Hg, Mo, Ni, V, Zn, Aroclor-1260, di-n-butylphthalate	--	398	--	$ND / 3 \times 10^{-8}$	Mix of revegetated and bare ground	No Action	2/15/2005
116-F-9	Animal Waste Leaching Trench	RLW	6×10^{-4}	C-14, Cs-137, Co-60, Eu-152, Sr-90, Cr-VI	5.7	5,484	49,405	$5.0 / 2 \times 10^{-7}$	Revegetated	Interim Closed Out	10/16/2002
118-F-8:1	105-F Reactor Ancillary Support Areas, Below-Grade Structures and Underlying Soils	RLW	--	Am-241, Ba-133, C-14, Co-60, Cs-137, Eu-152, Eu-154, Eu-155, Ni-63, Pu-238, Pu-239/240, Sr-90, H-3, Tc-99, U-234, U-235, U-238, Cr-VI, Ba, Hg, Pb, PCBs	6.1	3,319	22,132	$6.99 / 8 \times 10^{-7}$	Bare ground	Interim Closed Out	5/6/2004
1607-F2	1607-F2 Septic Tank, 124-F-2, 1607-F2 Sanitary Sewer System	NRLW	--	Co-60, Cs-137, Eu-152, Eu-154, Eu-155	4.6	6,679	35,099	$2.3 / <1 \times 10^{-5}$	Revegetated	Interim Closed Out	3/11/2003
1607-F6	1607-F6 Septic Tank, 124-F-6, 1607-F6 Sanitary Sewer System	NRLW	--	C-14, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Ni-63, Sr-90, Pb, Aroclor-1254	3.5	582	1,726	$3.82 / 8 \times 10^{-7}$	Revegetated	Interim Closed Out	11/8/2001
UPR-100-F-2	Basin Leak Ditch, 107-F Basin Leak Ditch, 100-F-3	RLW	--	Co-60, Cs-137, Eu-152, Eu-154	4.2	2,388	670	$3.90 / <1 \times 10^{-5}$	Revegetated	Interim Closed Out	4/23/2002
100-F-11	108-F Building 18 Inch French Drain	RLW	--	See 100-F-4 (grouped for cleanup)	5.6	7	None	--	See 100-F-4	Interim Closed Out	5/31/2001
100-F-12	36 Inch French Drain at 105-F Building	NRLW	--	As, Ba, Be, B, Cd, Cr (total), Co, Cu, Pb, Mn, Hg, Mo, Ni, V, Zn, Aroclor-1260	--	8	--	$-- / 1.1 \times 10^{-7}$	Bare ground	No Action	2/14/2005
100-F-14	100-FR-2 Vent Pipe, 100-F Carpenter Shop Waste Site Vent	NRLW	--	Cs-137, As, B, Ba, Be, Cr (total), Co, Cu, Pb, Mn, Hg, Mo, Ni, V, Zn, methylene chloride, bis-(2-ethylhexyl)phthalate, BHC, alpha	--	1	--	$ND / 9.3 \times 10^{-9}$	No current information	No Action	3/2/2005
100-F-15	108-F Building Ventilation French Drain, Undocumented	RLW	--	See 100-F-4 (grouped for cleanup)	4.6	153	None	--	See 100-F-4	Interim Closed Out	5/31/2001

Table 2-8. Current Condition of Waste Sites Evaluated in the RCBRA. (12 Pages)

Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
100-F-16	108-F Building 30 Inch French Drain, Undocumented	RLW	--	See 100-F-4 (grouped for cleanup)	3.3	7	None	--	See 100-F-4	Interim Closed Out	5/31/2001
100-F-18	105-F Condensate Drain Field, Underground Tank at 105-F Building, Undocumented	NRLW	--	As, Ba, Be, B, Cr (total), Co, Cu, Pb, Mn, Hg, Mo, Ni, V, Zn, bis(2-ethylhexyl)phthalate, di-n-butylphthalate	--	3	--	--	Bare ground	No Action	2/14/2005
100-F-19:1	100-F Reactor Cooling Water Effluent Underground Pipelines (North Group)	RLW	--	C-14, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Ni-63, Sr-90, Cr-VI	5	25,710	56,335	1.02 / 3.5×10^{-7}	Revegetated	Interim Closed Out	5/22/2002
100-F-19:2	100-F Reactor Cooling Water Effluent Underground Pipelines (South Group)	RLW	--	C-14, Cs-137, Co-60, Eu-152, Eu-154, Eu-155, Ni-63, Sr-90, Am-241, H-3, Pu-238, Ba, Pb, Hg, Cr-VI	5	19,000	39,347	2.25 / $<1 \times 10^{-5}$	No current information	Interim Closed Out	9/15/2003
600-23	Dumping Area Within Gravel Pit #11, Pit 11	NRSW	--	As, Ba, Cd, Cr (total), Cr-VI, Pb, Mn, Se, Ag, Zn, PCBs	5	4,638	16,330	-- / 6×10^{-7}	Revegetated	Interim Closed Out	11/30/2001
600-107	213-J&K Cribs, Gable Mountain Plutonium Storage Vault Cribs, 213-J & K Cribs	RLW	--	Cs-137, Th-232	--	7	--	ND / 1×10^{-5}	No current information	No Action	2/9/2004
600-128	White Bluffs Oil and Oil Filter Dump Site, Oil and Oil Filter Dump Site	NRSW	--	As, Ba, Cd, Cr (total), Pb, TPH, bis(2-ethylhexyl)phthalate	0.25	1	NA	-- / 2.4×10^{-9}	No current information	Interim Closed Out	9/16/2003
600-131	White Bluffs Water Station and Special Fabrication Shops and Warehouse, Special Fabrication Shop and Warehouse	NRSW	--	As, Ba, Cr (total), Pb, Cd, TPH	1.7	7,211	NA	-- / $<1 \times 10^{-5}$	Native vegetation	Interim Closed Out	9/12/2003
600-132	White Bluffs Construction Contractor Shop Landfill, Construction Contractor Shop Landfill	NRSW	--	As, Ba, Cd, Cr (total), Pb, Se, TPH, Aroclor-1260, bis(2-ethylhexyl)phthalate, di-n-butylphthalate	Surface only	17,090	NA	-- / 7×10^{-9}	Native vegetation	Interim Closed Out	9/12/2003
600-139	White Bluffs Automotive Repair Shop and Associated Waste Sites, Automotive Repair Shop	NRSW	--	As, Ba, Cr(total), Pb, sulfide, TPH	Surface only	602	NA	-- / $<1 \times 10^{-5}$	Native vegetation	Interim Closed Out	9/12/2003
600-171	White Bluffs Townsite	--	--	--	--	--	--	-- / $<1 \times 10^{-5}$	Native vegetation	Not Accepted	--
600-181	White Bluffs Oil Dump	NRLW	--	As, Ba, Cr (total), Pb, Cd, TPH	NA	239	NA	-- / $<1 \times 10^{-5}$	Native vegetation	Interim Closed Out	9/12/2003
600-190	White Bluffs Warehouse Tar and/or Paint Disposal Area	NRSW	--	As, Ba, Cd, Cr (total), Pb, CN, S, TPH, Aroclor-1254, Aroclor-1260, acenaphthylene, anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)peryelene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, di-n-buthylphthalate, indeno(1,2,3-cd)pyrene, napthalene, pyrene	0.25	891	NA	-- / 8.8×10^{-7}	No current information	Interim Closed Out	9/16/2003

Table 2-8. Current Condition of Waste Sites Evaluated in the RCBRA. (12 Pages)

Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
600-204	Hanford Townsite Burn and Burial Trench	NRSW	--	As, Ba, Cr (total), Pb, Cd, TPH	Surface only	2,364	NA	-- / <1 × 10^{-5}	Native vegetation	Interim Closed Out	9/16/2003
600-208	Hanford Construction Camp Boiler House Ponds	NRLW	--	None	--	2,009	None	-- / <1 × 10^{-5}	Native vegetation	No Action	8/12/2004
600-235	Buried Lead Sheathed Telephone Cables	NRSW	--	As, Ba, Cd, Cr (total), Pb, Hg, Se, Ag, PAH, PCBs	--	--	--	--	Native vegetation	No Action	3/9/2005
628-1	White Bluffs Burn Pit	NRSW	--	As, Ba, Cr (total), Pb	1.2	2,168	NA	-- / <1 × 10^{-5}	No current information	Interim Closed Out	9/16/2003
100-K Decision Area											
100-K-29	183-KE Sandblasting Site	NRSW	--	As, Ba, Cd, Cr (total), Cr-VI, Pb, Hg, Aroclor-1254	0.051	275	187	-- / 2.08 × 10^{-7}	Bare ground	Interim Closed Out	6/24/2004
100-K-30	183-KE Sulfuric Acid Tank Bases (West Tank)	NRLW	--	As, Ba, Cd, Cr (total), Cr-VI, Pb, Hg, sulfate	1	38	123.7	-- / 3 × 10^{-7}	Bare ground	Interim Closed Out	8/2/2004
100-K-31	183-KE Sulfuric Acid Tank Bases (East tank)	NRLW	--	As, Ba, Cd, Cr (total), Cr-VI, Pb, Hg, Se, sulfate	0.61	39	123.7	-- / 1 × 10^{-7}	Bare ground	Interim Closed Out	8/2/2004
100-K-32	183-KW Sulfuric Acid Tank Bases (East tank)	NRLW	--	As, Ba, Cd, Cr (total), Cr-VI, Pb, Hg, Se, sulfate	0.61	39	123.7	-- / 1 × 10^{-7}	Bare ground	Interim Closed Out	7/27/2004
100-K-33	100-K-33, 183-KW Sulfuric Acid Tank Bases (West tank)	NRLW	--	As, Ba, Cd, Cr (total), Cr-VI, Pb, Hg, Se, Ag, sulfate	0.91	38	123.7	-- / <7 × 10^{-7}	Bare ground	Interim Closed Out	8/24/2004
100-K-55:1	Process Pipelines Outside of Reactor Fence to Outfall	RLW	--	Ce-137, Eu-152, Eu-154	8.8	55,960	86,551	4.59 / <1 × 10^{-5}	Revegetated	Interim Closed Out	9/23/2005
100-K-56:1	Reactor Process Effluent Pipelines from 105KE Reactor Security Fence to the Active Utilities 116-K-1 Crib, 116-K-2 Trench and 116-KE-4 Retention Basin and Process Water Pipeline between Reactors	RLW	--	See 100-K-55:1 (grouped for cleanup)	--	--	--	9.95 / <1 × 10^{-5}	Revegetated	Interim Closed Out	9/23/2005
116-K-1	100-K Crib, 100-K Pond, 116-K-1 Trench, 107-K Pond, 107-K(E) Sump, 100-K Emergency Pond	RLW	>1.0 × 10^{-2}	Cs-137, Co-60, Eu-152, Eu-154, Sr-90, Cr (total), Cr-VI	11	15,700	101,396	8.87 / 1 × 10^{-7}	Revegetated	Interim Closed Out	5/17/2004
116-K-2	100-K Mile Long Trench, K Trench, 116-K-2 Trench, 100-K Emergency Trench, 107-K Effluent Trench, Bypass Crib Ditch	RLW	>1.0 × 10^{-2}	C-14, Cs-137, Co-60, Eu-152, Eu-154, Ni-63, Pu-239/240, Sr-90, Cr-VI	7.6	55,540	410,000	7.77 / 1.9 × 10^{-7}	Revegetated	Interim Closed Out	3/23/2006
116-KE-4	107-KE Retention Basins, 107-KE	RLW	>1.0 × 10^{-2}	Cs-137, C-60, Eu-152, Eu-154, Pu-239/240, Sr-90, U-233/234, Cr-VI	4.3	16,730	167,634	5.43 / 3 × 10^{-7}	Bare ground	Interim Closed Out	6/30/2005
116-KE-5	150-KE Heat Recovery Station	RLW	--	As, Ba, Cd, ethylene glycol, Cr (total), Cr-VI, Pb, Hg	--	--	--	-- / 1.6 × 10^{-7}	Bare ground	Interim Closed Out	9/23/2005

Table 2-8. Current Condition of Waste Sites Evaluated in the RCBRA. (12 Pages)

Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
116-KW-3	107-KW Retention Basin, 107-KW	RLW	$>1.0 \times 10^{-2}$	Cs-137, Co-60, Eu-152, Eu-154, Pu-239/240, U-233/234, U-235, Sr-90, Cr-VI	6.1	17,240	169,893	$9.54 / 4 \times 10^{-7}$	Revegetated	Interim Closed Out	4/12/2004
116-KW-4	150-KW Heat Recovery Station	RLW	--	See 100-KE-5 (grouped for cleanup)	--	--	--	$-- / 1.1 \times 10^{-7}$	Revegetated	Interim Closed Out	9/23/2005
128-K-1	100-K Burning Pit	NRSW	--	As, Ba, Cd, Cr (total), Cr-VI, Pb, Hg, Se, TPH, SVOCs	0.5	105	146	$-- / 5.3 \times 10^{-7}$	Native vegetation	Interim Closed Out	8/24/2004
100-N Decision Area											
116-N-3	1325-N Liquid Waste Disposal Facility, 1325-N Crib and Trench	RLW	$>1.0 \times 10^{-2}$	Am-241, Cs-137, Co-60, Eu-154, Eu-155, H-3, Ni-63, Pu-239/240, Sr-90, Hg, nitrate	6.46	21,980	14,0270	$5.95 / <1 \times 10^{-5}$	Revegetated	Interim Closed Out - CERCLA Only	12/23/2002
120-N-1	1324-NA Percolation Pond	NRLW	--	Ba, Cr (total), Cu, Pb, Hg, Ni, Zn, sulfate	NA	7,812	NA	$-- / <1 \times 10^{-5}$	Revegetated	NA	NA
300 Decision Area											
300 Ash Pits	300 Area Ash Pits	NRLW	--	U-234, U-235, U-238, Co-60, uranium (total), As, benzo(a)pyrene, chrysene, PCBs, Th	--	7,285	--	0.19 / --	Revegetated	Closed Out	12/17/1997
300 VTS	300 Area Vitrification Test Site, In-Situ Vitrification (ISV) Test Site	RSW	--	Am-241, Cs-137, Co-60, Pu-238, Pu-239/240, Ru-106, Sr-90, PCBs	6	1,283	5,311	$0.058 / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	3/6/2006
300-10	Burial Trench West of Process Trenches	RSW	--	Co-60, uranium, As, Th, benzo(a)pyrene, chrysene, PCBs	1.8	1,494	2,051	$0.12 / <1 \times 10^{-5}$	Revegetated	Closed Out	12/17/1997
300-18	SCA #4, Surface Contaminated Area #4	RSW	$>1.0 \times 10^{-4}$	Uranium, As, Ba, Be, Cd, Cr (total), Pb	1	220	392	$ND / <1 \times 10^{-5}$	Revegetated	Interim Closed Out	8/25/2005
300-45	Surface Contamination Area, Location 3: Bird Droppings Area (Southwest corner of the 316-5 Process Trenches Fence Line). SCA #1	RSW	--	Co-60, uranium, As, Th, benzo(a)pyrene, chrysene, PCBs	0.3	198	253	$0.11 / <1 \times 10^{-5}$	Revegetated	Closed Out	5/13/1998
300-49	Landfill 1a, UPR-300-FF-1, UN-300-FF-1	RSW	--	Co-60, U-234, U-235, U-238, Aroclor-1254, lead	3	2,993	17,761	$0.03 / 2 \times 10^{-8}$	Revegetated	Closed Out	5/28/2003
300-50	Landfill 1b, UPR-300-FF-1, UN-300-FF-1	RSW	--	Co-60, U-233/234, U-235, U-238, Aroclor-1254, Aroclor-1260	3.1	7,142	35,652	$0.36 / 1.1 \times 10^{-7}$	Revegetated	Closed Out	5/29/2003
300-8	Aluminum Recycle Storage Area, Aluminum Shavings Area	RSW	$>1.0 \times 10^{-4}$	Uranium, Be	0.6	32,681	39,750	$ND / <1 \times 10^{-5}$	Revegetated	Interim Closed Out	10/28/2005
316-1	South (old) Pond, 300 Area South Process Pond	RLW	$>1.0 \times 10^{-4}$	Co-60, U-233/234, U-235, U-238, Aroclor-1248, Aroclor-1254	5.7	67,603	234,000	$6.25 / 1.8 \times 10^{-6}$	Revegetated	Closed Out	7/23/2003
316-2	North (new) Pond, 300 Area North Process Pond	RLW	$>1.0 \times 10^{-4}$	Co-60, uranium, PCBs	7.5	64,667	139,204	11.3 / --	Revegetated	Closed Out	8/24/1999
316-5	3904 Process Waste Trenches, 300 Area Process Trenches, 300 APT	RLW	$>1.0 \times 10^{-4}$	Co-60, uranium, As, Th, benzo(a)pyrene, chrysene, PCBs	6.3	20,167	34,386	$10.0 / <1 \times 10^{-5}$	Revegetated	Closed Out	8/10/1998
600-259	Inactive Lysimeter Site East End, Special Waste Form Lysimeter, Grout Waste Test Facility	RLW	--	Cs-134, Cs-137, Co-60, Mn-54, Tc-99, H-3	4	300	950	$0.092 / <1 \times 10^{-5}$	Bare ground	Interim Closed Out	2/6/2006

Table 2-8. Current Condition of Waste Sites Evaluated in the RCBRA. (12 Pages)

Site Code	Waste Site Name	Waste Site Type	Cancer Risk Prior to Remediation (QRA Residential)	Major Contaminants (From Comparison Table)	Excavation Depth (m)	Surface Area (m^2)	Waste Removed (metric tons)	Current Rad Dose[a]/Cancer Risk[b] (IAROD Scenarios)	Current Site Condition	Current Status	Date Reclassified
600-47	Dumping Area North of 300-FF-1	RSW	$>1.0 \times 10^{-4}$	Uranium, As, Ba, Be, Cd, Cr (total), Pb	1.5	1,394	2,159	0.13 / $<1 \times 10^{-5}$	Revegetated	Interim Closed Out	8/25/2005
618-12	North Process Pond Scraping Disposal Area	RSW	--	See 316-2 (grouped for cleanup)	--	--	--	4.48 / --	Revegetated	Closed Out	8/24/1999
618-4	Burial Ground No. 4, 318-4	RSW	$>1.0 \times 10^{-4}$	U-234, U-235, U-238, Uranium (total), Pb, Cd, Ba, Cr (total), PCBs, TCE, PCE, MEK, benzene, TPH, asbestos	11	7,343	46,585	0.05 / $<1 \times 10^{-5}$	Revegetated	Closed Out	7/12/2004
618-5	Burial Ground No. 5, Regulated Burning Ground, 318-5	RSW	$>1.0 \times 10^{-4}$	Uranium, As, Cd, Cr (total), Pb	7	8,107	46,948	0.10 / $<1 \times 10^{-5}$	Revegetated	Interim Closed Out	7/12/2004
628-4	Landfill 1D	RSW	--	Co-60, U-234, U-235, U-238, Aroclor-1242, Aroclor-1248, Aroclor-1254, lead	5.7	1,594	5,635	0.055 / 7.5×10^{-7}	Revegetated	Closed Out	7/23/2001
JA Jones 1	JA JONES 1, JA Jones 1, JA Jones Dumping Pit #1, JA Jones Construction Pit #1	NRSW	--	Ba, Cd, Cr (total), Pb	3.4	4,720	12,700	-- / $<1 \times 10^{-5}$	Revegetated	Interim Closed Out	11/8/2001

[a] Radiation dose (mrem/yr) from direct exposure to radionuclide contaminants of concern.
[b] Excess cancer risk from nonradionuclide carcinogenic contaminants of concern.

-- = not applicable
IAROD = interim action record of decision
MEK = methyl ethyl ketone
NA = not available
ND = anthropogenic radionuclides < detection limit and naturally occurring radionuclides < background
NRLW = nonradioactive liquid waste
NRSW = nonradioactive solid waste
PAH = polycyclic aromatic hydrocarbons
PCB = polychlorinated biphenyl
PCE = tetrachloroethylene
RCBRA = River Corridor Baseline Risk Assessment
RLW = radioactive liquid waste
RSW = radioactive solid waste
SVOC = semivolatile organic compound
TCE = trichloroethene
TPH = total petroleum hydrocarbons

Table 2-9. Status of River Corridor Groundwater Operable Unit Interim Actions.

Operable Unit	Contaminant	Type of Action	Status of Action
100-KR-4	Chromium	Pump and treat	Under expansion
100-HR-3 (100-D Area)	Chromium	In-situ barrier	Chemical enhancement
		Pump and treat	Under expansion
100-HR-3 (100-H Area)	Chromium	Pump and treat	Continued operations
100-NR-2[a]	Strontium-90	Pump and treat	Cold standby
300-FF-5	Uranium	Monitored natural attenuation	Under evaluation

[a] The 100-N Area pump-and-treat operations were placed in cold standby during the testing of alternative remedial methods.

Table 2-10. Summary of Screening-Level Cumulative Cancer Risks and Noncancer Hazard Indices for Remediated Waste Sites. (7 Pages)

Waste Site Name	Cancer Risk		Cancer Risk Drivers		Noncancer Hazard Index	Noncancer Hazard Drivers
	Chemical	Radionuclide	Chemical	Radionuclide	Chemical	Chemical
100-B/C Area						
100-B-5	--	7×10^{-6}	--	None	0.01	None
100-B-8:1	--	6×10^{-5}	--	None	0.01	None
100-B-8:2	--	8×10^{-5}	--	None	0.01	None
100-B-11	--	1×10^{-5}	--	None	0.02	None
100-B-14:5	--	--	--	--	0.02	None
100-B-14:6	--	--	--	--	0.08	None
100-B-14:7	--	--	--	--	0.03	None
100-B-16	--	--	--	--	0.01	None
116-B-1	--	7×10^{-5}	--	None	0.02	None
116-B-2	--	6×10^{-5}	--	None	0.01	None
116-B-3	--	8×10^{-6}	--	None	0.01	None
116-B-4	--	7×10^{-6}	--	None	0.01	None
116-B-6A	--	5×10^{-4}	--	Cesium-137 (3E-04), strontium-90 (2E-04)	0.01	None
116-B-6B	--	5×10^{-6}	--	None	0.01	None
116-B-7	--	3×10^{-5}	--	None	0.02	None
116-B-9	--	7×10^{-6}	--	None	0.02	None
116-B-10	--	1×10^{-5}	--	None	0.06	None
116-B-11	--	3×10^{-4}	--	Europium-152 (2E-04)	0.03	None
116-B-12	--	5×10^{-6}	--	None	0.01	None
116-B-13	--	4×10^{-5}	--	None	0.01	None
116-B-14	--	4×10^{-4}	--	Europium-152 (2E-04)	0.02	None
116-B-15	--	7×10^{-6}	--	None	0.01	None
118-B-3	--	3×10^{-5}	--	None	0.01	None
118-B-4	--	3×10^{-5}	--	None	--	--
118-B-5	--	2×10^{-6}	--	None	--	--
118-B-9	--	--	--	--	0.04	None

Table 2-10. Summary of Screening-Level Cumulative Cancer Risks and Noncancer Hazard Indices for Remediated Waste Sites. (7 Pages)

Waste Site Name	Cancer Risk		Cancer Risk Drivers		Noncancer Hazard Index	Noncancer Hazard Drivers
	Chemical	Radionuclide	Chemical	Radionuclide	Chemical	Chemical
118-B-10	--	4×10^{-5}	--	None	0.01	None
128-B-2	2E-07	2×10^{-5}	None	None	0.08	None
132-B-6	--	2×10^{-4}	--	None	0.02	None
1607-B7	--	--	--	--	0.01	None
1607-B8	8E-07	--	None	--	0.25	None
1607-B9	--	--	--	--	0.02	None
1607-B10	1E-07	2×10^{-6}	None	None	0.06	None
1607-B11	--	--	--	--	0.001	None
100-C-3	--	1×10^{-5}	--	None	0.02	None
116-C-1	--	2×10^{-4}	--	None	0.01	None
116-C-2A	--	1×10^{-4}	--	None	0.01	None
116-C-5	--	2×10^{-4}	--	None	0.01	None
116-C-6	--	1×10^{-4}	--	None	0.01	None
118-C-2	--	2×10^{-5}	--	None	--	--
118-C-4	--	3×10^{-6}	--	None	0.01	None
128-C-1	1E-06	--	None	--	0.39	None
132-C-2	--	3×10^{-5}	--	None	0.01	None
600-232	5E-08	--	None	--	0.02	None
600-233	--	--	--	--	0.01	None
100-D/100-H Area						
100-D-4	2E-07	3×10^{-5}	None	None	0.001	None
100-D-12	--	--	--	--	--	--
100-D-20	--	9×10^{-5}	--	None	0.01	None
100-D-21	--	8×10^{-6}	--	None	--	--
100-D-22	--	--	--	--	--	--
100-D-48:1	--	4×10^{-5}	--	None	0.01	None
100-D-48:2	--	1×10^{-4}	--	None	0.01	None
100-D-48:3	--	2×10^{-4}	--	Cesium-137 (2E-04)	0.01	None

Table 2-10. Summary of Screening-Level Cumulative Cancer Risks and Noncancer Hazard Indices for Remediated Waste Sites. (7 Pages)

Waste Site Name	Cancer Risk		Cancer Risk Drivers		Noncancer Hazard Index	Noncancer Hazard Drivers
	Chemical	Radionuclide	Chemical	Radionuclide	Chemical	Chemical
100-D-48:4	--	7×10^{-5}	--	None	0.01	None
100-D-49:2	--	3×10^{-5}	--	None	0.005	None
100-D-49:4	--	1×10^{-4}	--	None	0.01	None
100-D-52	--	4×10^{-6}	--	None	0.01	None
116-D-1A	--	7×10^{-5}	--	None	0.01	None
116-D-2	--	7×10^{-6}	--	None	0.01	None
116-D-4	--	4×10^{-6}	--	None	0.01	None
116-D-7	--	5×10^{-5}	--	None	0.01	None
116-D-9	--	2×10^{-5}	--	None	0.01	None
116-DR-1&2	--	5×10^{-5}	--	None	0.01	None
116-DR-4	--	1×10^{-5}	--	None	0.01	None
116-DR-6	--	4×10^{-5}	--	None	0.01	None
116-DR-7	--	2×10^{-5}	--	None	0.01	None
116-DR-9	--	4×10^{-4}	--	Cesium-137 (4E-04)	0.01	None
118-DR-2:2	5E-06	1×10^{-4}	Arsenic (5E-06)	None	0.14	None
122-DR-1:2	4E-06	6×10^{-6}	Arsenic (5E-06)	None	0.13	None
1607-D2:1	2E-06	6×10^{-6}	Arsenic (2E-06)	None	0.06	None
1607-D2:3	--	1×10^{-5}	--	None	0.002	None
1607-D2:4	--	4×10^{-6}	--	None	0.01	None
1607-D4	2E-06	--	Arsenic (2E-06)	--	0.07	None
100-H-5	6E-06	1×10^{-5}	Arsenic (6E-06)	None	0.19	None
100-H-17	5E-06	5×10^{-5}	Arsenic (5E-06)	None	0.15	None
100-H-21	2E-05	6×10^{-5}	Arsenic (2E-05)	None	0.58	None
100-H-24	6E-06	--	Arsenic (6E-06)	--	0.17	None
116-H-1	1E-05	1×10^{-4}	Arsenic (1E-05)	None	0.29	None
116-H-7	8E-06	5×10^{-5}	Arsenic (8E-06)	None	0.23	None
1607-H2	1E-05	9×10^{-6}	Arsenic (1E-05)	None	0.54	None

Table 2-10. Summary of Screening-Level Cumulative Cancer Risks and Noncancer Hazard Indices for Remediated Waste Sites. (7 Pages)

Waste Site Name	Cancer Risk		Cancer Risk Drivers		Noncancer Hazard Index	Noncancer Hazard Drivers
	Chemical	Radionuclide	Chemical	Radionuclide	Chemical	Chemical
100-F/100-IU-2/100-IU-6 Area						
100-F-2	--	1×10^{-5}	--	None	--	--
100-F-7	4E-06	--	Arsenic (4E-06)	--	0.12	None
100-F-9	4E-06	--	Arsenic (4E-06)	--	0.12	None
100-F-11	--	--	--	--	--	--
100-F-12	4E-06	--	Arsenic (4E-06)	--	0.11	None
100-F-14	3E-06	--	Arsenic (3E-06)	--	0.09	None
100-F-15	--	--	--	--	0.002	None
100-F-16	--	--	--	--	0.002	None
100-F-18	3E-06	--	Arsenic (3E-06)	--	0.08	None
100-F-19:1	--	1×10^{-5}	--	None	0.002	None
100-F-19:2	--	5×10^{-5}	--	None	0.02	None
100-F-23	--	5×10^{-6}	--	None	--	--
100-F-24	--	7×10^{-6}	--	None	--	--
100-F-25	--	1×10^{-5}	--	None	0.01	None
100-F-26:1	5E-06	5×10^{-6}	Arsenic (5E-06)	None	0.15	None
100-F-26:2	3E-06	--	Arsenic (3E-06)	--	0.10	None
100-F-26:5	3E-06	--	Arsenic (3E-06)	--	0.10	None
100-F-26:7	4E-06	--	Arsenic (4E-06)	--	0.11	None
100-F-35	--	3×10^{-5}	--	None	--	--
100-F-37	3E-05	--	Arsenic (3E-05)	--	0.77	None
100-F-38	4E-06	--	Arsenic (4E-06)	--	0.14	None
116-F-1	1E-05	4×10^{-5}	Arsenic (1E-05)	None	0.27	None
116-F-2	--	6×10^{-5}	--	None	0.01	None
116-F-3	--	--	--	--	0.003	None
116-F-4	--	2×10^{-5}	--	None	0.01	None
116-F-5	3E-06	1×10^{-5}	Arsenic (3E-06)	None	0.08	None
116-F-6	--	1×10^{-4}	--	None	0.002	None

Table 2-10. Summary of Screening-Level Cumulative Cancer Risks and Noncancer Hazard Indices for Remediated Waste Sites. (7 Pages)

Waste Site Name	Cancer Risk		Cancer Risk Drivers		Noncancer Hazard Index	Noncancer Hazard Drivers
	Chemical	Radionuclide	Chemical	Radionuclide	Chemical	Chemical
116-F-9	--	1×10^{-4}	--	Strontium-90 (1E-04)	--	--
116-F-10	--	9×10^{-5}	--	None	0.01	None
116-F-14	4E-06	3×10^{-4}	Arsenic (4E-06)	Europium-152 (3E-04)	0.12	None
118-F-8:1	1E-06	7×10^{-5}	None	None	0.02	None
1607-F2	--	4×10^{-5}	--	None	--	--
1607-F6	8E-07	1×10^{-5}	None	None	0.27	None
UPR-100-F-2	--	1×10^{-4}	--	None	--	--
600-107	--	3×10^{-6}	--	None	--	--
600-128	3E-06	--	Arsenic (3E-06)	--	0.10	None
600-131	5E-06	--	Arsenic (5E-06)	--	0.14	None
600-132	4E-06	--	Arsenic (4E-06)	--	0.24	None
600-181	5E-06	--	Arsenic (5E-06)	--	0.13	None
600-190	6E-06	--	Arsenic (4E-06), Aroclor-1254 (2E-06)	--	0.80	None
600-204	4E-06	--	Arsenic (4E-06)	--	0.12	None
600-23	7E-06	7×10^{-5}	Arsenic (4E-06), Aroclor-1254 (3E-06)	None	0.95	None
600-235	7E-06	--	Arsenic (7E-06)	--	0.21	None
628-1	5E-06	--	Arsenic (5E-06)	--	0.13	None
100-K Area						
100-K-29	--	--	--	--	--	--
100-K-30	4E-06	--	Arsenic (4E-06)	--	0.86	None
100-K-31	4E-06	--	Arsenic (4E-06)	--	0.34	None
100-K-32	4E-06	--	Arsenic (4E-06)	--	0.21	None
100-K-33	4E-06	--	Arsenic (4E-06)	--	0.23	None
100-K-55:1	--	1×10^{-4}	--	None	0.01	None
100-K-56:1	--	2×10^{-4}	--	Europium-152 (1E-04)	0.01	None
116-K-1	--	2×10^{-4}	--	None	0.00	None

Table 2-10. Summary of Screening-Level Cumulative Cancer Risks and Noncancer Hazard Indices for Remediated Waste Sites. (7 Pages)

Waste Site Name	Cancer Risk		Cancer Risk Drivers		Noncancer Hazard Index	Noncancer Hazard Drivers
	Chemical	Radionuclide	Chemical	Radionuclide	Chemical	Chemical
116-K-2	--	1×10^{-4}	--	None	0.01	None
116-KE-4	--	8×10^{-5}	--	None	0.01	None
116-KE-5	6E-06	--	Arsenic (6E-06)	--	0.17	None
116-KW-3	--	1×10^{-4}	--	None	0.01	None
116-KW-4	4E-06	--	Arsenic (4E-06)	--	0.11	None
100-N Area						
116-N-3	--	9×10^{-6}	--	None	--	--
120-N-1	--	--	--	--	0.002	None
300 Area						
300 VTS	--	1×10^{-6}	--	None	--	--
300-8	--	3×10^{-6}	--	None	0.01	None
300-10	2E-05	1×10^{-5}	Arsenic (2E-05)	None	0.58	None
300-18	3E-06	2×10^{-6}	Arsenic (3E-06)	None	0.10	None
300-45	--	6×10^{-6}	--	None	0.01	None
300-49	6E-06	1×10^{-5}	Arsenic (6E-06)	None	0.20	None
300-50	1E-05	5×10^{-5}	Arsenic (9E-06)	None	0.56	None
316-1	3E-05	2×10^{-4}	Arsenic (2E-05), Aroclor-1248 (6E-06)	Cobalt-60 (1E-04)	1.4	Arsenic (0.5)
316-2	1E-05	3×10^{-4}	Arsenic (1E-05), Aroclor-1248 (2E-06)	Uranium-238 (2E-04)	1.0	Calculated total uranium (0.7)
316-5	4E-06	5×10^{-4}	Arsenic (3E-06)	Uranium-235 (1E-04), uranium-238 (2E-04)	1.2	Calculated total uranium (1)
618-4	5E-06	1×10^{-5}	Arsenic (5E-06)	None	0.17	None
618-5	6E-06	5×10^{-6}	Arsenic (6E-06)	None	0.19	None
618-12	1E-05	5×10^{-5}	Arsenic (1E-05)	None	0.55	None
628-4	9E-06	5×10^{-6}	Arsenic (6E-06), Aroclor-1248 (2E-06)	None	0.43	None
600-47	3E-06	7×10^{-6}	Arsenic (3E-06)	None	0.12	None

Table 2-10. Summary of Screening-Level Cumulative Cancer Risks and Noncancer Hazard Indices for Remediated Waste Sites. (7 Pages)

Waste Site Name	Cancer Risk		Cancer Risk Drivers		Noncancer Hazard Index	Noncancer Hazard Drivers
	Chemical	Radionuclide	Chemical	Radionuclide	Chemical	Chemical
600-259	--	3×10^{-6}	--	None	--	--
JA Jones 1	--	--	--	--	--	--

NOTE: Chemical drivers shown have an associated risk greater than 1E-06 or a hazard quotient greater than 1.
Radionuclides drivers shown have an associated risk greater than 1E-04.
The risk or hazard quotient value for the individual drivers is shown in parentheses after the name of the driver chemical or radionuclide.
Risks and hazard indices are based on reasonable maximum exposure point concentrations.

-- = not applicable

Table 3-1. Comparison of Human Health Cancer Risk Results Between Qualitative Risk Assessment and RCBRA Exposure Scenarios for Selected Yet-to-Be Remediated Waste Sites.

Waste Site	Waste Site Type	QRA Frequent-Use Scenario (Residential) Cancer Risk	RCBRA Exposure Scenarios, Cancer Risk					
			Casual Recreational User [a]	Industrial Worker	Resident Monument Worker	Subsistence Farmer	CTUIR Residential	Yakama Nation Residential
116-N-2 (1310-N Chemical Waste Storage Tank)	Waste storage facility and potential underground contamination	**>1 x 10^{-2}**	8 x 10^{-4}	7 x 10^{-3}	2 x 10^{-2}	**2 x 10^{-2}**	7 x 10^{-2}	7 x 10^{-2}
116-D-5 (1904-D Outfall Structure)	Reactor effluent spillway	**>1 x 10^{-2}**	2 x 10^{-3}	2 x 10^{-2}	6 x 10^{-2}	**7 x 10^{-2}**	2 x 10^{-1}	2 x 10^{-1}
130-D-1 (1716-D Removed Gasoline Storage Tank)	Spill site	**2 x 10^{-4}**	7 x 10^{-6}	7 x 10^{-5}	2 x 10^{-4}	**2 x 10^{-4}**	7 x 10^{-4}	6 x 10^{-4}
116-H-9 (117-H Seal Pit Crib)	Liquid waste disposal site	**5 x 10^{-4}**	9 x 10^{-6}	8 x 10^{-5}	2 x 10^{-4}	**3 x 10^{-4}**	8 x 10^{-4}	8 x 10^{-4}
116-B-5 (108-B Crib)	Liquid waste disposal site	**2 x 10^{-3}**	7 x 10^{-5}	6 x 10^{-4}	2 x 10^{-3}	**2 x 10^{-3}**	6 x 10^{-3}	6 x 10^{-3}
116-N-1 (1301-N Crib and Trench)	Liquid waste disposal site	**>1 x 10^{-2}**	>1	>1	>1	**>1**	>1	>1
116-D-6 (105-D Cushion Corridor French Drain)	Liquid waste disposal site	**2 x 10^{-4}**	8 x 10^{-6}	7 x 10^{-5}	2 x 10^{-4}	**3 x 10^{-4}**	7 x 10^{-4}	7 x 10^{-4}
116-H-2 (1608-H Crib and Trench)	Liquid waste disposal site	**5 x 10^{-3}**	1 x 10^{-4}	1 x 10^{-3}	4 x 10^{-3}	**5 x 10^{-3}**	1 x 10^{-2}	1 x 10^{-2}
116-H-3 (105-H Dummy Decontamination French Drain)	Liquid waste disposal site	**>1 x 10^{-2}**	5 x 10^{-4}	4 x 10^{-3}	1 x 10^{-2}	**1 x 10^{-2}**	4 x 10^{-2}	4 x 10^{-2}

[a] Casual Recreational User scenario shown for comparison purposes only. Recreational uses are envisioned to occur across areas much larger than an individual waste site.

CTUIR = Confederated Tribes of the Umatilla Indian Reservation
QRA = qualitative risk assessment
RCBRA = River Corridor Baseline Risk Assessment

Table 3-2. Examples of Waste Excavated from River Corridor Waste Sites.

Waste Site	Site Type	Waste Streams/Forms	Key Contaminants
618-2	Burial ground	Laboratory and construction-type debris, lead debris, laboratory glassware, drummed oil, metal crucibles, and centrifuges	Uranium isotopes, plutonium isotopes, lead
618-4	Burial ground	- More than 780 drums containing depleted uranium shavings immersed in oil or containing depleted uranium oxide powder - Lead debris and contaminated soil - Miscellaneous construction and demolition debris - Lab waste	Uranium isotopes, lead, arsenic barium, PCBs, petroleum hydrocarbons, asbestos
118-B-1	Burial ground	- 6 pieces of SNF - Perforated and nonperforated spacers, spline cases, tritium separation components, lead debris, reactor parts and hardware, compressed gas cylinders, dried paints, tar, electrical components - 1,000 tritium gas tubes, 350 barium desiccant tubes, 81 mercury packaging tubes, 50 glass/plastic bottles	Cesium-137, cobalt-60, europium isotopes, strontium-90, tritium, lead, hexavalent chromium, mercury, PCBs, asbestos
116-DR-1 116-DR-2	Liquid effluent trench	More than 91,000 tons of contaminated soil from liquid waste disposal	Cesium-137, cobalt-60, europium isotopes, hexavalent chromium
116-B-1	Liquid effluent trench	More than 47,000 tons of contaminated soil from liquid waste disposal	Cesium-137, cobalt-60, europium isotopes, strontium-90, hexavalent chromium
316-1	Process pond	257,000 tons of contaminated soil from liquid waste disposal	Uranium isotopes, cobalt-60

PCB = polychlorinated biphenyl
SNF = spent nuclear fuel

Table 3-3. Sampling of Hanford Site River Effluent Pipelines.

Effluent Pipelines Site Number	Reactor Area or Facility	Number of River Effluent Pipelines	Characterized?
100-B-15	100-B	2	Yes
	100-C	2	
100-D-60	100-D	2	Yes
	100-DR	1	
100-F-39	100-F	2	Yes
100-H-34	100-H	2	No
100-K-80	100-KE and 100-KW	2	No
100-N-77	100-N	1	No
100-N-80	100-N	1	No

Table 3-4. Description of the River Effluent Pipelines. (2 Pages)

Operable Unit	Site Name	Number of Effluent Pipelines	Description
100-BC-1	100-B-15	1	The effluent pipeline in the 100-B/C Area extending from the 116-B-7 Outfall Structure is constructed of 107-cm (42-in.)-diameter carbon steel pipe with a 1.3-cm (0.5-in.)-thick wall. The line is 228 m (750 ft) long. When last investigated, 13 m (40 ft) of the pipe near the discharge was exposed and the remainder was buried (WHC-SD-EN-TI-278).
		1	The effluent pipeline in the 100-B/C Area extending from the 132-B-6 Outfall Structure is constructed of 168-cm (66-in.)-diameter carbon steel pipe with a 1.3-cm (0.5-in.)-thick wall. The line is 211 m (692 ft) long. When last investigated, 30 m (100 ft) of the pipe near the discharge was exposed and the remainder was buried (WHC-SD-EN-TI-278).
		2	The effluent pipelines in the 100-B/C Area extending from the 132-C-2 Outfall Structure consist of two 137-cm (54-in.)-diameter steel pipes with 1.3-cm (0.5-in.)-thick walls. The lines are 204 m (670 ft) long. When last investigated, the pipes were exposed at various locations along their lengths (WHC-SD-EN-TI-278).
100-DR-1	100-D-60	2	The effluent pipelines in the 100-D Area extending from the 116-D-5 Outfall Structure are constructed of two 107-cm (42-in.)-diameter reinforced concrete/steel pipes. The steel pipes have a 1.3-cm (0.5-in.)-thick wall. The pipes extend approximately 576 m (1,850 ft) into the river, passing through 100-D Island. The outlets were not exposed on the river bottom when last inspected in 1994.
		1	The effluent pipeline in the 100-D Area extending from the 116-DR-5 Outfall Structure is constructed of a 168-cm (66-in.)-diameter carbon steel pipe with a 1.3-cm (0.5-in.)-thick wall. The line extends approximately 549 m (1,800 ft) into the river, passing through 100-D Island. The outlet was exposed on the river bottom when last investigated (WCH-SD-EN-TI-278).
100-FR-1	100-F-39	2	This site consists of the river effluent pipelines in the 100-F Area that extend from the 116-F-8 Outfall Structure into the main channel of the Columbia River. Two parallel pipelines were constructed of 107-cm (42-in.)-diameter reinforced concrete/steel pipes with 1.3-cm (0.5-in.)-thick walls. Conflicting information exists about whether the pipelines are 137 m (450 ft) long or 91 m (300 ft) in length. According to visual inspection by divers in 1984 (UNI-3262), pipelines and their anchors appeared to have moved a short distance from their original positions, and pipe sections of unknown length appeared to be missing. When last investigated, the pipelines could not be clearly identified (WHC-SD-EN-TI-278).

Table 3-4. Description of the River Effluent Pipelines. (2 Pages)

Operable Unit	Site Name	Number of Effluent Pipelines	Description
100-HR-1	100-H-34	2	This site includes two 152-cm (60-in.) diameter (1.3-cm [0.5-in.]-thick walls) steel effluent pipelines in the 100-H Area that extend 230 m (753 ft) from the face of the 116-H-5 Outfall Structure into the main channel of the Columbia River. The total drop from the face of the outfall structure to the discharge end of the pipeline is 8.5 m (28 ft). The pipelines are separated by approximately 90 cm (35 in.) and are covered by a minimum of 1 m (3 ft) of sediment over their entire length, as well as large pieces of basalt riprap extending from the face of the outfall to the shoreline. When last investigated, the two pipelines appeared to be completely buried (WHC-SD-EN-TI-278).
100-KR-1	100-K-80	2	The effluent pipelines in the 100-K Area extending from the 116-K-3 Outfall Structure are constructed of a 213-cm (84-in.)-diameter carbon steel pipe with a 1.3-cm (0.5-in.)-thick wall. The west and east pipelines are parallel lines extending approximately 400 m (1,313 ft) into the river. The tops of both pipelines were exposed along most of their length when last investigated (WHC-SD-EN-TI-278), protruding 0.3 to 0.9 m (1 to 3 ft) above the riverbed. The east pipeline is still used (as of February 2005) as a National Pollutant Discharge Elimination System discharge point by U.S. Department of Energy's Spent Nuclear Fuels Program.
100-NR-1	100-N-77	1	The site is located in the 100-N Area and consists of a 260-cm (102-in.) river effluent pipeline that extends from the 1908-N Outfall Structure into the main channel of the Columbia River approximately 265 m (871 ft). This pipeline is downstream of the 100-N-80 Effluent Pipeline. When last investigated (WHC-SD-EN-TI-278), the pipeline outlet was exposed on the river bottom.
100-NR-1	100-N-80	1	The site is located in the 100-N Area and consists of a 335-cm (132-in.)-diameter river effluent pipeline that extends from the 1908-NE Hanford Generating Plant outfall structure into the main channel of the Columbia River approximately 313 m (1,028 ft). This pipeline is upstream of the 100-N-77 River Effluent Pipeline.

UNI-3262, 1986, *River Discharge Lines Characterization Report*, UNC Nuclear Industries, Inc., Richland, Washington.

WHC-SD-EN-TI-278, 1994, *Columbia River Effluent Pipeline Survey*, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Table 3-5. Summary of Analytical Data Included in the Project Database. (3 Pages)

Data Source	Category	Analyte Type			
		Inorganic	Organic	Other	Radionuclide
Biota					
100-B/C Pilot Project	Nonoperational	X	X	NA	X
	Reference - B/C	X	X	NA	X
	Waste site	X	X	NA	X
Central Plateau Ecological Risk Assessment	Nonoperational	NA	X	NA	X
	Reference - Central Plateau backfill	X	X	NA	X
	Reference - Central Plateau native soil	NA	NA	NA	X
	Waste site backfill	X	X	NA	X
	Waste site native soil	NA	NA	NA	X
100-NR-2 Shoreline Evaluation	Nonoperational	X	NA	NA	X
Surface Environmental Surveillance Program	Nonoperational	X	X	X	X
	Reference - PNNL	X	X	NA	X
	Waste site	X	NA	NA	NA
River Corridor Baseline Risk Assessment	Nonoperational	X	X	X	X
	Reference	X	X	NA	X
	Reference backfill	X	X	NA	X
	Reference native soil	X	X	NA	X
	Waste site backfill	X	X	NA	X
	Waste site native soil	X	X	NA	X
Sediment					
100-B/C Pilot Project	Nonoperational	X	NA	NA	X
	Reference-B/C	X	NA	NA	NA
100-NR-2 Shoreline Evaluation	Nonoperational	X	NA	NA	X
Surface Environmental Surveillance Program	Nonoperational	X	NA	X	X
	Reference - PNNL	X	NA	X	X
River Corridor Baseline Risk Assessment	Nonoperational	X	X	X	X
	Reference	X	X	X	X

Table 3-5. Summary of Analytical Data Included in the Project Database. (3 Pages)

Data Source	Category	Analyte Type			
		Inorganic	Organic	Other	Radionuclide
Soil					
Hanford Area Background	Area background	X	NA [a]	X	X
100-B/C Pilot Project	Nonoperational	X	X	NA	X
	Reference - B/C	X	NA	NA	X
	Waste site	X	X	X	X
Central Plateau Ecological Risk Assessment	Nonoperational	NA	NA	NA	X
	Reference - Central Plateau backfill	X	X	X	X
	Reference - Central Plateau native soil	NA	NA	NA	X
	Reference - Central Plateau offsite	NA	NA	NA	X
	Waste site backfill	X	X	X	X
	Waste site native soil	NA	NA	NA	X
CVP and RSVP Reports	Waste site	X	X	X	X
Surface Environmental Surveillance Program	Nonoperational	X	NA	X	X
	Reference - PNNL	X	NA	NA	X
	Waste site	X	NA	NA	NA
River Corridor Baseline Risk Assessment	Nonoperational	X	X	X	X
	Reference	X	X	X	X
	Reference backfill	X	X	X	X
	Reference native soil	X	X	X	X
	Waste site backfill	X	X	X	X
	Waste site native soil	X	X	X	X
Washington State Background	Regional	X	NA	NA	NA
	Statewide	X	NA	NA	NA
Water					
100-B/C Pilot Project	Nonoperational	X	X	X	X
	100-B/C Pilot Project	NA	NA	NA	X
100-NR-2 Shoreline Evaluation	Nonoperational	X	NA	X	X
Surface Environmental Surveillance Program	Nonoperational	X	X	X	X
	Reference - PNNL	X	X	X	X
River Corridor Baseline Risk Assessment	Nonoperational	X	X	X	X
	Reference	X	X	X	X

Table 3-5. Summary of Analytical Data Included in the Project Database. (3 Pages)

Data Source	Category	Analyte Type			
		Inorganic	Organic	Other	Radionuclide
Hanford Groundwater	Operational	X	X	X	X

[a] Three Hanford Area background soil samples were analyzed for organic chemicals. These data are included in the project database, but are too few to support background comparisons.

NOTE: Analytical results for environmental concentrations in media applicable to the human health risk assessment are summarized. Data Source and Category are fields in the project database (http://rcbra.gisdt.org/).

B/C = 100-B/C Pilot Project
CVP = cleanup verification package
NA = not available
PNNL = Pacific Northwest National Laboratory
RSVP = remaining sites verification package
X = data are available

Table 3-6. Summary of Data Resources Used for Comparison to Waste Site and 100 Area and 300 Area RCBRA Investigation Area and Near-Shore Aquatic Location Data.

Resource	Description of Relevant Data
Hanford Area Background	
DOE/RL-92-24, 1995, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Rev. 4, 2 volumes, U.S. Department of Energy, Richland Operations Office, Richland, Washington.	Medium: Soil data were obtained from HEIS. Nonradionuclides only. Coordinates were not provided.
DOE/RL-95-55, 1995, *Hanford Site Background: Evaluation of Existing Soil Radionuclide Data,* Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.	Medium: Soil data were hand-entered. Radionuclides only. Coordinates provided.
DOE/RL-96-12, 1996, *Hanford Site Background: Part 2, Soil Background for Radionuclides,* Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.	Medium: Soil. Some data were obtained from HEIS and some data were hand-entered. Radionuclides only.
Washington State Background	
EPA, 1994, *Natural Background Soil Metals Concentrations in Washington State*, Ecology Publication No. 94-115, Washington State Department of Ecology, Olympia, Washington.	Medium: Soil. Nonradionuclides.
Reference	
RCBRA Project (this report).	Media: Soil, biota, ecological measures, bioassays, histopathology.
DOE/RL-2007-50, 2008, *Central Plateau Terrestrial Ecological Risk Assessment Report*, Draft A, U.S. Department of Energy, Richland Operations Office, Richland, Washington.	Media: Soil, biota, ecological measures.
Reference Comparison	
Surface Environmental Surveillance Program data, originating from the following electronic files WARD SOIL 90-04 XY.txt, WARD VEG 90-04 XY.txt, WARD SOIL 05 XY.txt , WARD VEG 05 XY.txt.	Media: Soil, vegetation (1990 to 2005). Data provided by PNNL from their database. Coordinates were provided for some locations and converted to a common coordinate system.
Hanford Site-relevant data from the *Columbia River Component Data Evaluation Summary Report*, WCH-91, Rev. 0, Washington Closure Hanford, Richland Washington, July, 2006.	Media: Biota, surface water, and sediment data from a variety of sources.

HEIS = Hanford Environmental Information System
PNNL = Pacific Northwest National Laboratory
RCBRA = River Corridor Baseline Risk Assessment

Table 3-7. Analytes Excluded as Contaminants of Potential Concern. (2 Pages)

Soil Analytes [a]
Half-life <3 years
Actimium-228
Cerium-144
Cesium-134
Cobalt-58
Iron-59
Lead-212
Lead-214
Manganese-54
Ruthenium-103
Ruthenium-106
Sodium-22
Thorium-234
Tin-113
Essential Nutrient
Calcium
Magnesium
Potassium
Sodium
Physical Measure
% Retained on No. 100 screen
% Retained on No. 16 screen
% Retained on No. 200 screen
% Retained on No. 30 screen
% Retained on No. 325 screen
% Retained on No. 50 screen
% Retained on No. 8 screen
Nitrogen, Kjeldahl total
Percent moisture
pH measurement
Total organic carbon
Background Radionuclide
Potassium-40
Radium-224
Radium-226
Radium-228
Thorium-228
Thorium-230
Thorium-232
Other Chemicals
Silicon

Table 3-7. Analytes Excluded as Contaminants of Potential Concern. (2 Pages)

Groundwater Analytes
Half-life <3 years
Actimium-228
Antimony-125
Beryllium-7
Cesium-134
Cobalt-58
Iron-59
Lead-212
Lead-214
Ruthenium-106
Sodium-22
Essential Nutrient
Calcium
Magnesium
Potassium
Sodium
Water Quality
Alkalinity
Coliform bacteria
Conductivity
Dissolved oxygen
Hardness
Ignitability
Oxidation reduction potential
Sodium dithionite
Specific conductance
Temperature
Total inorganic carbon
Total organic carbon
Total organic halides
Turbidity
pH measurement
Background Radionuclide
Potassium-40
Radium-226
Radium-228
Thorium-228
Thorium-230
Thorium-232
Other Chemicals
Silicon

[a] Apply to biota, except physical measure.

Table 3-8. Analytes Included as Contaminants of Potential Concern.

Analyte	100 Area	300 Area
Waste Site Analytes		
Cesium-137	Yes	Yes
Total chromium	Yes	No
Cobalt-60	Yes	Yes
Europium-152	Yes	No
Europium-154	Yes	No
Hexavalent chromium	Yes	No
Lead	Yes	Yes
Mercury	Yes	No
Plutonium-239/240	Yes	Yes
Strontium-90	Yes	Yes
Uranium-238	Yes	Yes
Uranium-233/234	Yes	Yes
Uranium-235	Yes	Yes
Total uranium	Yes	Yes
Groundwater Analytes		
Carbon-14	Yes	No
Chromium	Yes	No
cis-1,2-Dichloroethene	No	Yes
Hexavalent chromium	Yes	No
Nitrate	Yes	No
Petroleum hydrocarbons [a]	Yes (100-N only)	No
Strontium-90	Yes	Yes
Sulfate	Yes	No
Technetium-99	Yes	Yes
Tetrachloroethene	No	Yes
Tributyl phosphate	No	Yes
Trichloroethene	Yes	Yes
Tritium	Yes	Yes
Uranium [b]	Yes	Yes

[a] Petroleum hydrocarbon constituents – PAH, benzene, ethylbenzene, toluene, and xylenes are included.
[b] Isotopic and total uranium are included.
PAH = polycyclic aromatic hydrocarbons

Table 3-9. Data Sets Used for Identifying Contaminants of Potential Concern and Calculating Representative Concentrations for the Upland and Riparian Environments. (2 Pages)

Soil and Biota – Upland and Riparian Environments						
Data Set	**Local Area COPC Identification**	**Local Area RC**	**Broad Area Upland COPC Identification [a]**	**Broad Area Upland RC [b]**	**Broad Area Riparian COPC Identification [a]**	**Broad Area Riparian RC [c]**
RCBRA						
MIS - upland	--	17 Sites [d]	20 Sites; 5 values per site	20 Sites; 1 value per site	--	--
Discrete - upland	[c]	[c]	[c]	[c]	[c]	[c]
MIS - riparian	--	--	--	--	18 Sites; 5 values per site	18 Sites; 1 value per site
Discrete - riparian	--	--	--	--	[c]	[c]
CVP shallow zone (excavated)	6 ROD Areas; separate COPCs for each	6 ROD Areas; 164 sites	--	--	--	--
RSVP shallow zone (interval starts with 0 ft)				--	--	--
100-B/C Pilot Project						
Discrete - upland	[f]	[f]	5 Sites	[g]	--	--
Discrete - riparian	--	--	--	--	7 Sites	7 Sites; no RCBRA overlap
100-NR-2						
Discrete - riparian	--	--	--	--	3 Sites	3 Sites; no RCBRA overlap

Table 3-9. Data Sets Used for Identifying Contaminants of Potential Concern and Calculating Representative Concentrations for the Upland and Riparian Environments. (2 Pages)

Soil and Biota – Upland and Riparian Environments						
Data Set	**Local Area COPC Identification**	**Local Area RC**	**Broad Area Upland COPC Identification [a]**	**Broad Area Upland RC [b]**	**Broad Area Riparian COPC Identification [a]**	**Broad Area Riparian RC [c]**
Other Programs						
SESP	--	--	[h]	[h]	[h]	[h]
Near-Facility Monitoring Program	--	--	[i]	[i]	--	--

[a] COPCs are identified by pooling the data across all sampling locations. Soil data and plant tissue data are used for COPC identification (see Section 4.2).
[b] One value is used to represent a COPC concentration at an individual site. Upland RCs for the entire River Corridor are then calculated by pooling these values across all sites.
[c] Riparian RCs are calculated separately for each of the six ROD areas.
[d] The 17 sites are those for which both RCBRA surface soil data and CVP/RSVP shallow zone data are available. Ten of the 17 sites were excavated during interim closure and backfilled with clean soil.
[e] Discrete soil samples were collected at some RCBRA locations for specific purposes. They are not combined with the MIS results; only MIS data are used in the HHRA.
[f] These data are equivalent to the discrete CVP/RSVP data for individual remediated waste sites.
[g] There is only one discrete sample at each of the five sites. Data are inadequate for assessing average surface soil concentrations at a remediated waste site.
[h] Spatial scale is uncertain; SESP results generally pertain to unimpacted areas. Limited suites and sample extraction issues (hydrofluoric acid). Shown in Appendix B; could also be evaluated in box-and-whisker plots in Appendix C.
[i] Very few samples in the River Corridor, mostly in the 200 Area. Limited suites and sample extraction issues (hydrofluoric acid). These are from potentially affected areas.

-- = not applicable
COPC = contaminant of potential concern
CVP = cleanup verification package
HHRA = human health risk assessment
MIS = *MULTI INCREMENT®* sampling
RC = representative concentration
RCBRA = River Corridor Baseline Risk Assessment
ROD = record of decision
RSVP = remaining sites verification package
SESP = Surface Environmental Surveillance Program

Table 3-10. Data Sets Used for Identifying Contaminants of Potential Concern and Calculating Representative Concentrations for the Near-Shore Environment. (2 Pages)

Sediment, Pore Water, Biota, and Surface Water – Near-Shore Environment							
Data Set	**COPC Identification; All ROD Areas**	**100-B/C Area RC**	**100-K Area RC**	**100-D/ 100-H Area RC**	**100-N Area RC**	**100-F/ 100-IU-2/ 100-IU-6 RC**	**300 Area RC**
RCBRA							
Sediment	69 Samples	2 Sites	4 Sites	7 Sites	8 Sites	10 Sites	15 Sites
River water	52 Samples	2 Sites	4 Sites	8 Sites	10 Sites	6 Sites	12 Sites
Pore water	60 Samples	[a]	[a]	[a]	[a]	[a]	[a]
Sculpin	38 Samples	2 Sites	2 Sites	3 Sites	1 Site	5 Sites	4 Sites
Clams	51 Samples	2 Sites	4 Sites	7 Sites	1 Site	3 Sites	10 Sites
Macroinvertebrates	28 Samples	2 Sites	1 Site	2 Sites	1 Site	5 Sites	6 Sites
100-B/C Pilot							
Sediment	2 Samples	2 Sites	--	--	--	--	--
River water	17 Samples	6 Sites	--	--	--	--	--
Seep water	[b]	[c]	--	--	--	--	--
Sculpin, clam	6 to 9 Samples	5 to 8 Sites	--	--	--	--	--
100-NR-2							
Sediment	3 Samples	--	--	--	1Site	--	--
River water	3 Samples	--	--	--	2 Site	--	--
Seep water	[c]	--	--	--	[c]	--	--
Sculpin, clam	5 Sculpin; 27 clams	--	--	--	3 Sculpin; 6 clam	--	--
SESP							
Food fish species	[d]	[d]	[d]	[d]	[d]	[d]	[d]
Sediment	[c]	[c]	[c]	[c]	[c]	[c]	[c]
Bivalves, sucker, macroinvertebrates	[c]	[c]	[c]	[c]	[c]	[c]	[c]
Seep water	[b]	[c]	[c]	[c]	[c]	[c]	[c]
River water	[c]	[c]	[c]	[c]	[c]	[c]	[c]

Table 3-10. Data Sets Used for Identifying Contaminants of Potential Concern and Calculating Representative Concentrations for the Near-Shore Environment. (2 Pages)

Sediment, Pore Water, Biota, and Surface Water – Near-Shore Environment							
Data Set	**COPC Identification; All ROD Areas**	**100-B/C Area RC**	**100-K Area RC**	**100-D/ 100-H Area RC**	**100-N Area RC**	**100-F/ 100-IU-2/ 100-IU-6 RC**	**300 Area RC**
EPA							
Food fish species	f	f	f	f	f	f	f

[a] Not identified as a plausible human health exposure medium.
[b] COPCs for the semiquantitative assessment of risks related to seep water are based on key analytes identified in the Hanford monitoring reports.
[c] Semiquantitative evaluation of potential risk; representative concentrations were not calculated.
[d] Evaluation of food fish data in the Hanford Reach of the Columbia River is deferred to the Columbia River risk assessment.
[e] Not used. Uncertain relation to "near-shore" river environment. Uncertain that data are biased towards impacted areas. Limited suites and sediment sample extraction issues (hydrofluoric acid). Adequate spatial coverage and sample support from RCBRA, 100-B/C Pilot, and 100-NR-2.
[f] An evaluation of risks related to regional contaminants (PCBs, Hg, pesticides) from EPA publications is included in the HHRA.

-- = not applicable
COPC = contaminant of potential concern
EPA = U.S. Environmental Protection Agency
HHRA = Human Health Risk Assessment
PCB = polychlorinated biphenyl
RC = representative concentration
RCBRA = River Corridor Baseline Risk Assessment
ROD = record of decision
SESP = Surface Environmental Surveillance Program

Table 3-11. Potentially Complete Exposure Pathways and Associated Media for the Recreational and Nonresidential Tribal Scenarios. (2 Pages)

Exposure Media and Data Sets	Exposure Scenario and Receptors: Potentially Complete Pathways			
	Casual User (Adult; Child)	Avid Angler (Adult; Child)	Avid Hunter (Adult; Child)	Nonresidential Tribal [a] (Adult; Child)
Upland surface soil (RCBRA 0 to 6 in. surface soil data)			Inadvertent ingestion; dust inhalation; dermal absorption, [b] external irradiation	Inadvertent ingestion; dust inhalation; dermal absorption, [b] external irradiation
Upland soil (<15 ft shallow zone cleanup verification waste site data)				
Upland soil (>15 ft deep zone cleanup verification waste site data)				
Riparian surface soil (RCBRA 0 to 6 in. surface soil data)	Inadvertent ingestion; dust inhalation; dermal absorption, [b] external irradiation	Dust inhalation		Inadvertent ingestion; dust inhalation; dermal absorption, [b] external irradiation
Sediment (RCBRA data)		Inadvertent ingestion; dermal absorption, [b] external irradiation		Inadvertent ingestion; dermal absorption, [b] external irradiation
Garden produce				
Poultry and eggs				
Beef				
Milk				
Wild plants [c] (RCBRA soil data)				Ingestion
Wild game [d] (RCBRA soil data)			Ingestion	Ingestion
Fish (RCBRA data)		Ingestion		Ingestion
Groundwater				

Table 3-11. Potentially Complete Exposure Pathways and Associated Media for the Recreational and Nonresidential Tribal Scenarios. (2 Pages)

Exposure Media and Data Sets	Exposure Scenario and Receptors: Potentially Complete Pathways			
	Casual User (Adult; Child)	Avid Angler (Adult; Child)	Avid Hunter (Adult; Child)	Nonresidential Tribal [a] (Adult; Child)
River water (RCBRA data)		Ingestion		Ingestion; sweat lodge [e] ingestion, inhalation, and dermal absorption [b]
Seep water (SESP data)		Ingestion [f]		Ingestion [f]

= Incomplete exposure pathway.

NOTE: A comparison of exposure pathways and receptors for the Interim Action RODs and those used in this risk assessment is presented in Appendix D-4.

[a] Receptors in the Nonresidential Tribal scenario engage in hunting activities (related to the upland environment) and fishing activities (related to the riparian and near-shore environment). During fishing activities, exposure due to inadvertent ingestion, dermal absorption, and external irradiation is split evenly between riparian soil and sediment.

[b] Not evaluated for radionuclides (EPA/540/1-89/002 *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual [Part A]*; Section 10.5.5).

[c] Wild plants are assumed to be gathered during both hunting (upland environment) and fishing (riparian environment). Fifty percent of wild plants are assumed to be gathered in the upland environment and 50% in the riparian environment. Due to sampling and analytical issues related to the RCBRA plant data, COPC concentrations in wild plants are modeled from surface soil data.

[d] Game tissue concentrations are modeled based on contaminant concentrations in upland surface soil, with uptake from both grazed plants and directly from soil that may be ingested while grazing. SESP data for game tissue are limited to very few analytes and are used to qualify modeled results.

[e] Sweat lodge exposure is evaluated for the adult receptor. Sweat lodge exposure frequency for children ages 2 to 6 years is unknown, so exposure of young children is not evaluated.

[f] Seasonal, with low volume. A semiquantitative evaluation of risks related to ingestion of seep water is performed.

COPC = contaminant of potential concern
RCBRA = River Corridor Baseline Risk Assessment
ROD = record of decision
SESP = Surface Environmental Surveillance Program

Table 3-12. Potentially Complete Exposure Pathways and Associated Media for the Occupational Scenarios. (2 Pages)

Exposure Media and Data Sets	Exposure Scenario and Receptors: Potentially Complete Pathways	
	Resident National Monument/Refuge (Adult)	**Industrial/Commercial (Adult)**
Upland surface soil (RCBRA 0 to 6 in. surface soil data)	Inadvertent ingestion; dust inhalation; dermal absorption, [a] external irradiation (occupational component)	
Upland soil [b] (<15-ft shallow zone cleanup verification waste site data)	Inadvertent ingestion; dust inhalation; [c] dermal absorption, [a] external irradiation; leaching to groundwater; VOC migration to indoor air (residential component)	Inadvertent ingestion; dust inhalation, [c] dermal absorption, [b] external irradiation; VOC migration to indoor air
Upland soil (>15-ft deep zone cleanup verification waste site data)	VOC migration to indoor air (residential component)	VOC migration to indoor air
Riparian surface soil		
Sediment		
Garden produce		
Poultry and eggs		
Beef		
Milk		
Wild plants		
Wild game		
Fish		
Groundwater (HEIS data)	Ingestion; dermal absorption, [b] indoor VOC inhalation (residential component)	
River water		

Table 3-12. Potentially Complete Exposure Pathways and Associated Media for the Occupational Scenarios. (2 Pages)

Exposure Media and Data Sets	Exposure Scenario and Receptors: Potentially Complete Pathways	
	Resident National Monument/Refuge (Adult)	Industrial/Commercial (Adult)
Seep water		

= Incomplete exposure pathway.

NOTE: A comparison of exposure pathways and receptors for the Interim Action RODs and those used in this risk assessment is presented in Appendix D-4.

[a] Not evaluated for radionuclides (EPA/540/1-89/002 *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual [Part A]*; Section 10.5.5).

[b] Separate risk assessment results are presented for exposure at each individual remediated waste site (shallow zone cleanup verification soil data).

[c] Exposure to airborne dust is evaluated as the sum of local-area (remediated waste site) and broad-area (RCBRA upland soil) source terms, as described in Section 3.4.3.

HEIS = Hanford Environmental Information System
RCBRA = River Corridor Baseline Risk Assessment
ROD = record of decision
VOC = volatile organic compound

Table 3-13. Potentially Complete Exposure Pathways and Associated Media for the Residential Scenarios. (2 Pages)

Exposure Media and Data Sets	Exposure Scenario and Receptors: Potentially Complete Pathways		
	Subsistence Farmer (Adult; Child)	CTUIR Resident (Adult; Child)	Yakama Resident (Adult; Child)
Upland surface soil			
Upland soil [a] (<15-ft shallow zone cleanup verification waste site data)	Inadvertent ingestion; dust inhalation, [b] dermal absorption, [c] external irradiation; VOC migration to indoor air	Inadvertent ingestion; dust inhalation, [b] dermal absorption, [c] external irradiation; VOC migration to indoor air	Inadvertent ingestion; dust inhalation, [b] dermal absorption, [c] external irradiation; VOC migration to indoor air
Upland soil (>15-ft deep zone cleanup verification waste site data)	VOC migration to indoor air	VOC migration to indoor air	VOC migration to indoor air
Riparian surface soil			
Sediment			
Garden produce (shallow zone soil data) [d]	Ingestion	Ingestion	Ingestion
Poultry and eggs (shallow zone soil data) [d]	Ingestion		
Beef (shallow zone soil data) [e]	Ingestion	Ingestion	Ingestion
Milk (shallow zone soil data) [e]	Ingestion		Ingestion
Wild plants [f]			
Wild game [f]			
Fish (RCBRA data)	Ingestion	Ingestion	Ingestion
Groundwater (HEIS data)	Ingestion; dermal absorption, [c] indoor volatiles inhalation	Ingestion; dermal absorption, [c] indoor volatiles inhalation; sweat lodge [g] ingestion, inhalation, [h] and dermal absorption [c]	Ingestion; dermal absorption, [c] indoor volatiles inhalation; sweat lodge [g] ingestion, inhalation, [h] and dermal absorption [c]

Table 3-13. Potentially Complete Exposure Pathways and Associated Media for the Residential Scenarios. (2 Pages)

Exposure Media and Data Sets	Exposure Scenario and Receptors: Potentially Complete Pathways		
	Subsistence Farmer (Adult; Child)	CTUIR Resident (Adult; Child)	Yakama Resident (Adult; Child)
River water (RCBRA data)			
Seep water (SESP)			

= Incomplete exposure pathway.

NOTE: A comparison of exposure pathways and receptors for the Interim Action RODs and those used in this risk assessment is presented in Appendix D-4.

[a] Separate risk assessment results are presented for exposure at each individual remediated waste site (shallow zone cleanup verification soil data).

[b] Exposure to airborne dust is evaluated as the sum of local-area (remediated waste site) and broad-area (RCBRA upland soil) source terms, as described in Section 3.4.3.

[c] Not evaluated for radionuclides (EPA/540/1-89/002 *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual [Part A]*; Section 10.5.5).

[d] Environmental data for these media are not available. Contaminant concentrations are estimated by modeling from concentrations in cleanup verification data.

[e] Environmental data for beef and milk are not available. Contaminant concentrations for animals penned at the location of a remediated waste site are estimated by modeling from soil concentrations in cleanup verification data (soil → fodder crop → beef or milk).

[f] Exposure to wild plants, game, and river water is evaluated in the Nonresidential Tribal scenario. The residential scenario applications emphasize localized exposures.

[g] Sweat lodge exposure is evaluated for the adult receptor. Sweat lodge exposure frequency for children ages 2 to 6 years is unknown, so exposure of young children is not evaluated.

[h] CTUIR Resident scenario includes evaluation of exposure to gas-phase nonvolatile COPCs as described in Harris, S. G., and Harper, B. L., 2004, *Exposure Scenario for CTUIR Traditional Subsistence Lifeways,* Confederated Tribes of the Umatilla Indian Reservation, Department of Science & Engineering, Pendleton, Oregon. Based on correspondence between DOE and the Yakama Nation, these calculations are not performed for the Yakama Resident scenario.

CTUIR = Confederated Tribes of the Umatilla Indian Reservation
DOE = U.S. Department of Energy
HEIS = Hanford Environmental Information System
RCBRA = River Corridor Baseline Risk Assessment
ROD = record of decision
SESP = Surface Environmental Surveillance Program
VOC = volatile organic compound

Table 3-14. Parametric Computation of 95% Upper Confidence Limit of Mean of a Gamma Distribution with Shape Parameter, k, and Sample Size, n.

k	Sample Size, n	Method
$k \geq 0.5$	For all n	Approximate gamma 95% UCL
$0.1 \leq k < 0.5$	For all n	Adjusted gamma 95% UCL
$k < 0.1$	n <15	95% Hall's bootstrap UCL
	n ≥15	Adjusted gamma 95% UCL

Source: EPA/600/R-07/041, 2007, *ProUCL Version 4.0 Technical Guide*, Office of Research and Development, U.S. Environmental Protection Agency, Washington, D.C., Table 2.

k = shape parameter of the gamma distribution
n = sample size
UCL = upper confidence limit

Table 3-15. Nonparametric Computation of 95% Upper Confidence Limit of the Mean with Kaplan-Meier Estimation of the Mean and Standard Deviation in Cases with Nondetects.

σ	Sample Size, n	% Nondetect	Method
$\sigma \leq 0.5$	For all n	All	95% UCL based on Student's t
$0.5 < \sigma \leq 1.0$	n ≤ 50	0-20%	95% Chebyshev
	n >50		95% BCa Bootstrap
	All n	(20%, 40%)	95% BCa Bootstrap
	All n	≥40%	95% UCL based on Student's t
$1.0 < \sigma \leq 1.5$	n <40	<50%	99% Chebyshev UCL
	n ≥ 40		97.5% Chebyshev UCL
	All n	>50%	95% BCa Bootstrap
$1.5 < \sigma \leq 2.0$	n <40	<50%	99% Chebyshev UCL
	n ≥ 40		97.5% Chebyshev UCL
	n <40	≥50%	97.5% Chebyshev UCL
	n ≥ 40		95% Chebyshev UCL
$\sigma > 2.0$	n <50	All	97.5% Chebyshev UCL
	n ≥ 50		99% Chebyshev UCL

Source: EPA/600/R-07/041, 2007, *ProUCL Version 4.0 Technical Guide*, Office of Research and Development, U.S. Environmental Protection Agency, Washington, D.C., Table 3.

σ = standard deviation of the log-transformed data
n = sample size
UCL = upper confidence limit

Table 3-16. Number of Groundwater Percentiles Calculated with <10 and ≥10 Samples.

Number of Samples in RC Group	Groundwater Operable Unit						
	100-BC-5	100-KR-4	100-NR-2	100-HR-3	100-F/100-IU-2/ 100-IU-6	100-FR-3	300-FF-5
n <10	1	0	0	0	5	0	0
n ≥ 10	10	20	16	19	3	15	24
RC Total	11	20	16	19	8	15	24

n = number of detected samples
RC = representative concentration

Table 3-17. Ratios of Present-Day to Future Radionuclide Activities for Contaminants of Potential Concern in Surface Soil and Shallow Zone Soil.

Radionuclide COPC	Ratio at Year 2075	Ratio at Year 2150
Carbon-14 [a]	Effectively zero	Effectively zero
Cesium-137	0.198	0.0350
Cobalt-60	0.00010	Effectively zero
Europium-152	0.0262	0.000531
Europium-154	0.00403	0.000011
Nickel-63	0.602	0.349
Plutonium-239/240	0.998	0.995
Strontium-90	0.188	0.0315
Technetium-99 [b]	0.438	0.181
Uranium-233/234 [b]	0.961	0.921
Uranium-235 [b]	0.961	0.921
Uranium-238 [b]	0.961	0.921

NOTE: Calculated using RESRAD and input parameter values consistent with the DOE/RL-96-17, *Remedial Design Report/Remedial Action Work Plan for the 100 Area* groundwater protection inputs (see Appendix D-1.5), except with no cover and no irrigation. Present-day soil activity assigned to year 2005.

[a] Includes losses related to gas-phase migration as carbon dioxide.

[b] Ratios are related almost entirely to leaching with precipitation rather than radioactive decay.

COPC = contaminant of potential concern
RAWP = remedial action work plan
RDR = remedial design report
RESRAD = RESidual RADioactivity computer code

DOE/RL-96-17, 2005, *Remedial Design Report/Remedial Action Work Plan for the 100 Area,* Rev. 5, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Table 3-18. Reasonable Maximum Exposure Parameter Values for the Recreational and Nonresidential Tribal Scenarios. (2 Pages)

Parameter Name [a]	Units	Nonresidential Tribal [b]	Avid Hunting	Avid Fishing	Casual Use
IRs,d_adult	mg/day	200	100	100	100
IRs,d_child, 1-6	mg/day	400	--	--	200
IRs,d_child, 7-12	mg/day	--	200	200	--
InhR_adult	m^3/hr	1.6/1.08	1.6	1.0	1.0
InhR_child, 1-6	m^3/hr	1.2/0.33	--	--	1.0
InhR_child, 7-12	m^3/hr	--	1.2	1.0	--
SAs_adult	cm^2	5,700	3,300	5,700	5,700
SAs_child, 1-6	cm^2	2,800	--	--	2,800
SAs_child, 7-12	cm^2	--	1,660	3,830	--
SAw_adult	cm^2	18,000	--	--	--
SAw_child	cm^2	6,600	--	--	--
AF_adult	mg/cm^2	0.1	0.07	0.07	0.07
AF_child	mg/cm^2	0.2	0.2	0.2	0.2
IRw_adult	L/day	3.0	--	0.24	--
IRw_child	L/day	1.5	--	0.24	--
IRw_sweat_lodge	L/day	1.0	--	--	--
IRplant (wet wt)	g/day	Adult: 1,350 g/day Child: 610 g/day	--	--	--
F_site,plants	Unitless	0.8	--	--	--
IRfish (wet wt)	See value	Adult: 620 g/day Child: 310 g/day	--	3.3 g/kg/day	--
IRgame (wet wt)	See value	Adult: 125 g/day Child: 63 g/day	0.93 g/kg/day	--	--
Tsite_child	hr	9/24	8	8	6
Tsite_adult	hr	9/24	8	8	6
Tsite,out_child	hr	9/24	8	8	6

Table 3-18. Reasonable Maximum Exposure Parameter Values for the Recreational and Nonresidential Tribal Scenarios. (2 Pages)

Parameter Name [a]	Units	Nonresidential Tribal [b]	Avid Hunting	Avid Fishing	Casual Use
Tsite,out_adult	hr	9/24	8	8	6
Tsleep_child	hr	--	8	8	11.5
Tsleep_adult	hr	--	8	8	8
t_event,bath_child	hr/event	--	--	--	--
t_event,bath_adult	hr/event	--	--	--	--
t_event,sweat_lodge	hr/event	1.0	--	--	--
EF_adult	day/yr	120/46	30	60	30
EF_child	day/yr	120/46	30	60	30
EF_food	day/yr	365	365	365	--
EF_sweat_lodge	day/yr	0/46	--	--	--
EV_f,bath	event/day	--	--	--	--
ED_adult	yr	69	30	30	30
ED_child	yr	4	6	6	6
ED_sweat_lodge	yr	69	--	--	--
BW_adult	kg	70	70	70	70
BW_child, 1-6	kg	16	--	--	16.6
BW_child, 7-12	kg	--	34.6	34.6	--
AT_carc	yr	75	70	70	70
AT_nc	yr	ED	ED	ED	ED

[a] Definitions of parameter names are provided in Section 3.4 of this report.
[b] Parameters with two values pertain to hunting activities (first value) and fishing activities (second value).

-- = not applicable
AF = soil adherence factor
AT = averaging time
BW = body weight
ED = exposure duration
EF = exposure frequency
EF_{food} = exposure frequency for ingesting food products
$EV_{f,bath}$ = event frequency for bathing
F_{site} = fraction of foodstuff grown or gathered onsite
InhR = inhalation rate
IR_{gw} = groundwater ingestion rate
$IR_{s,d}$ = daily soil ingestion rate
SA_s = skin surface area exposed to soil
SA_w = skin surface area exposed to water
T_{site} = daily time spent in exposure area
T_{sleep} = daily time spent sleeping

Table 3-19. Reasonable Maximum Exposure Parameter Values for the Occupational and Residential Scenarios. (2 Pages)

Parameter Name [a]	Units	Industrial/ Commercial	Resident Monument/Refuge [b]	Subsistence Farmer	CTUIR Resident	Yakama Resident
IRs,d_adult	mg/day	100	100 [c]	100	400	200
IRs,d_child, 1-6	mg/day	--	--	200	400	400
InhR_adult	m^3/hr	1.0	0.63	0.63	1.25	1.08
InhR_child, 1-6	m^3/hr	--	--	0.34	0.34	0.667
SAs_adult	cm^2	3,300	5,700/3,300	5,700	5,700	5,700
SAs_child, 1-6	cm^2	--	--	2,800	2,800	2,800
SAw_adult	cm^2	--	18,000/--	18,000	18,000	18,000
SAw_child	cm^2	--	--	6,600	6,600	6,600
AF_adult	mg/cm^2	0.04	0.07/0.07 [c]	0.1	0.1	0.1
AF_child	mg/cm^2	--	--	0.2	0.2	0.2
IRw_adult	L/day	--	2.3/--	2.3	3	3
IRw_child	L/day	--	--	0.9	1.5	1.5
IRw_sweat_lodge	L/day	--	--	--	1.0	1.0
IRveg (wet wt)	See value	--	--	1.2 g/kg/day	Adult: 1,350 g/day Child: 610 g/day	Adult: 1,420 g/day Child: 310 g/day
IRfruit (wet wt)	See value	--	--	1.4 g/kg/day	(with IRveg)	(with IRveg)
IRchick (wet wt)	See value	--	--	1.3 g/kg/day	--	--
IRegg (wet wt)	See value	--	--	1.05 g/kg/day	--	--
IRbeef (wet wt)	See value	--	--	2.2 g/kg/day	Adult: 125 g/day Child: 63 g/day	Adult: 700 g/day Child: 210 g/day
IRmilk (wet wt)	See value	--	--	19.5 g/kg-day	--	Adult: 1.2 L/day Child: 0.5 L/day
IRfish (wet wt)	See value	--	--	0.86 g/kg-day	Adult: 620 g/day Child: 310 g/day	Adult: 520 g/day Child: 360 g/day
Tsite_child	hr	--	--	24	24	24
Tsite_adult	hr	8	13/8	21	24	24
Tsite,out_child	hr	--	--	3	5	5
Tsite,out_adult	hr	8	3/8	3	3	3

Table 3-19. Reasonable Maximum Exposure Parameter Values for the Occupational and Residential Scenarios. (2 Pages)

Parameter Name [a]	Units	Industrial/ Commercial	Resident Monument/Refuge [b]	Subsistence Farmer	CTUIR Resident	Yakama Resident
Tsleep_child	hr	--	--	11.5	--	--
Tsleep_adult	hr	8	8	8	--	--
t_event,bath_child	hr/event	--	--	1.0	1.0	1.0
t_event,bath_adult	hr/event	--	0.58/--	0.58	0.58	0.58
t_event,sweat_lodge	hr/event	--	--	--	1.0	7.0
EF_adult	day/yr	250	350/250	350	365	365
EF_child	day/yr	--	--	350	365	365
EF_food	day/yr	--	--	365	365	365
EF_sweat_lodge	day/yr	--	--	--	365	365
EV_f,bath	event/day	--	1/--	1	1	1
ED_adult	yr	25	25/25	30	75	70
ED_child	yr	--	--	6	6	6
ED_sweat_lodge	yr	--	--	--	69	64
BW_adult	kg	70	70	70	70	70
BW_child, 1-6	kg	--	--	16.6	16.6	16
AT_carc	yr	70	70	70	75	70
AT_nc	yr	ED	ED	ED	ED	ED

[a] Definitions of parameter names are provided in Section 3.4 of this report.
[b] Where there are two values, the first pertains to residential, the second to occupational components of the scenario.
[c] Residential and occupational components of risk are computed separately, but exposure during working days are apportioned between residential (waste site) and occupational (upland environment) activities. Exposure via soil ingestion and soil dermal pathways for the Resident Monument Worker is apportioned 50/50 to residential and occupational portions. Soil ingestion and adherence factor values have been halved for the occupational portion. For the residential portion, where exposure frequency is greater than for occupational, values of soil ingestion and adherence factor were calculated as: (1/2 value * EFocc/EFres) + (value * [EFres-EFocc]/EFres).

-- = not applicable
CTUIR = Confederated Tribes of the Umatilla Indian Reservation
ED = exposure duration

Table 3-20. Central Tendency Exposure Parameter Values. (2 Pages)

Parameter Name [a]	Units	Subsistence Farmer	Resident Monument/Refuge [b]	Industrial/ Commercial	Avid Hunting	Avid Fishing	Casual Use
IRs,d_adult	mg/day	50	50 [c]	50	50	50	50
IRs,d_child, 1-6	mg/day	100	--	--	--	--	100
IRs,d_child, 7-12	mg/day	--	--	--	100	100	--
InhR_adult	m^3/hr	0.63	0.63	0.63	1.0	1.0	1.0
InhR_child, 1-6	m^3/hr	0.34	--	--	--	--	1.0
InhR_child, 7-12	m^3/hr	--	--	--	1.0	1.0	--
SAs_adult	cm^2	5,700	5,700/3,300	3,300	3,300	5,700	5,700
SAs_child, 1-6	cm^2	2,800	--	--	--	--	2,800
SAs_child, 7-12	cm^2	--	--	--	1,660	3,830	--
SAw_adult	cm^2	18,000	18,000/--	--	--	--	--
SAw_child	cm^2	6,600	--	--	--	--	--
AF_adult	mg/cm^2	0.04	0.04/0.04 [c]	0.01	0.04	0.07	0.04
AF_child	mg/cm^2	0.04	--	--	0.04	0.2	0.04
IRw_adult	L/day	1.4	1.4/--	--	--	0.03	--
IRw_child	L/day	0.3	--	--	--	0.03	--
IRveg (wet wt)	g/kg/day	0.4	--	--	--	--	--
IRfruit (wet wt)	g/kg/day	0.53	--	--	--	--	--
IRchick (wet wt)	g/kg/day	0.70	--	--	--	--	--
IRegg (wet wt)	g/kg/day	0.67	--	--	--	--	--
IRbeef (wet wt)	g/kg/day	1.2	--	--	--	--	--
IRmilk (wet wt)	g/kg/day	10.2	--	--	--	--	--
IRfish (wet wt)	g/kg/day	0.49	--	--	--	0.49	--
IRgame (wet wt)	g/kg/day	--	--	--	0.48	--	--
Tsite_child	hr	24	--	--	8	5	3
Tsite_adult	hr	21	13/8	8	8	5	3

Table 3-20. Central Tendency Exposure Parameter Values. (2 Pages)

Parameter Name [a]	Units	Subsistence Farmer	Resident Monument/Refuge [b]	Industrial/ Commercial	Avid Hunting	Avid Fishing	Casual Use
Tsite,out_child	hr	1.7	--	--	8	5	3
Tsite,out_adult	hr	1.5	1.5/8	8	8	5	3
Tsleep_child	hr	11.5	--	--	8	8	11.5
Tsleep_adult	hr	8	8	8	8	8	8
t_event,bath_child	hr/event	0.33	--	--	--	--	--
t_event,bath_adult	hr/event	0.25	0.25/--	--	--	--	--
EF_adult	day/yr	350	350/250	250	10	30	10
EF_child	day/yr	350	--	--	10	30	10
EF_food	day/yr	365	--	--	365	365	365
EV_f,bath	event/day	1	1/--	--	--	--	--
ED_adult	yr	9	6.6/6.6	6.6	9	9	9
ED_child	yr	6	--	--	6	6	6
BW_adult	kg	70	70	70	70	70	70
BW_child, 1-6	kg	16.6	--	--	--	--	16.6
BW_child, 7-12	kg	--	--	--	34.6	34.6	--
AT_carc	yr	70	70	70	70	70	70
AT_nc	yr	ED	ED	ED	ED	ED	ED

[a] Definitions of parameter names are provided in Section 3.4 of this report.
[b] Where there are two values, the first pertains to residential and the second to occupational components of the scenario.
[c] Residential and occupational components of risk are computed separately, but exposure during working days are apportioned between residential (waste site) and occupational (upland environment) activities. Exposure via soil ingestion and soil dermal pathways for the Resident Monument Worker is apportioned 50/50 to residential and occupational portions. Soil ingestion and adherence factor values have been halved for the occupational portion. For the residential portion, where exposure frequency is greater than for occupational, values of soil ingestion and adherence factor were calculated as: (1/2 value * EFocc/EFres) + (value * [EFres-EFocc]/EFres).

-- = not applicable
ED = exposure duration

Table 3-21. Chronic Oral Reference Doses for Inorganic Chemicals. (2 Pages)

Chemical	Oral RfD (mg/kg-day)	Species	Critical Effect	UF	MF	Source	Notes
Aluminum	1.0	--	--	--	--	ORNL Database, 2008	Tier 2 (PPRTV)
Antimony	0.0004	Rat	Longevity, blood glucose, and cholesterol	1,000	1	IRIS 2009	Tier 1 (IRIS)
Arsenic	0.0003	Human	Hyperpigmentation, keratosis, and possible vascular complications	3	1	IRIS 2009	Tier 1 (IRIS)
Barium	0.2	Mouse	Nephropathy	300		IRIS 2009	Tier 1 (IRIS)
Beryllium	0.002	Dog	Small intestinal lesions	300	1	IRIS 2009	Tier 1 (IRIS)
Boron	0.2	Rat	Decreased fetal weight (developmental)	66		IRIS 2009	Tier 1 (IRIS)
Cadmium	0.001 (0.0005; see Notes)	Human	Significant proteinuria; food exposure	10	1	IRIS 2009	Tier 1 (IRIS); Tier 1 (IRIS) value of 0.0005 is applied for water ingestion
Chromium	1.5	Rat	No effects observed	100	10	IRIS 2009	Tier 1 (IRIS); trivalent chromium
Hexavalent chromium	0.003	Rat	None reported	300	3	IRIS 2009	Tier 1 (IRIS)
Cobalt	0.02	--	--	--	--	ORNL RAIS, 2008	Tier 2 (PPRTV)
Copper	0.04	Human	Gastrointestinal system irritation	None	None	ORNL Database, 2008	Tier 3 (HEAST)
Fluoride	0.06	Human	Objectionable dental fluorosis; cosmetic effect	1	1	IRIS 2009	Tier 1 (IRIS); soluble fluorine
Iron	0.7	--	--	--	--	ORNL Database, 2008	Tier 2 (PPRTV)
Lead	--	--	--	--	--	--	See Section 5.5.8
Manganese	0.14 (0.047)	Human	Central nervous system effects	1 (1)	1 (3)	IRIS 2009	Tier 1 (IRIS). RfD of 0.047 applies to soil and water exposures with MF of 3
Mercury	0.0003	Rat	Autoimmune effects; mercuric chloride (HgCL)	1,000	1	IRIS 2009	Tier 1 (IRIS); HgCl
Nickel	0.02	Rat	Decreased body and organ weights	300	1	IRIS 2009	Tier 1 (IRIS); nickel soluble salts

Table 3-21. Chronic Oral Reference Doses for Inorganic Chemicals. (2 Pages)

Chemical	Oral RfD (mg/kg-day)	Species	Critical Effect	UF	MF	Source	Notes
Nitrogen in nitrate	1.6 (0.36)	Human	Early clinical signs of methemoglobinemia in excess of 10% (0 to 3 months old; infants formula)	1	1	IRIS 2009	Tier 1 (IRIS). Value in parentheses is nitrate RfD applied to data reported as 'N in nitrate'
Nitrogen in nitrite	0.1 (0.03)	Human	Methemoglobinemia	1	10	IRIS 2009	Tier 1 (IRIS). Value in parentheses is nitrite RfD applied to data reported as 'N in nitrite'
Selenium	0.005	Human	Clinical selenosis	3	1	IRIS 2009	Tier 1 (IRIS)
Silver	0.005	Human	Argyria	3	1	IRIS 2009	Tier 1 (IRIS)
Strontium (elemental)	0.6	Rat	Rachitic bone	300	1	IRIS 2009	Tier 1 (IRIS)
Tin	--	--	--	--	--	ORNL Database, 2008	Tier 3 (HEAST)
Uranium (inorganic)	0.0006	Rat	Renal effects	100	1	EPA, Office of Ground Water and Drinking Water	The RfD is the basis for the current MCL. Recommended by Region 10 for use in the Upper Columbia River risk assessment
Vanadium	0.009	Rat	Decreased hair cystine	100	1	IRIS 2009	Tier 1 (IRIS); as vanadium pentoxide
Zinc	0.3	Human	Decreases in erythrocyte superoxide dismutase activity in healthy adult male and female volunteers	3	--	IRIS 2009	Tier 1 (IRIS)

-- = not applicable
EPA = U.S. Environmental Protection Agency
HEAST = Health Effects Assessment Summary Tables
IRIS = Integrated Risk Information System
MCL = maximum contaminant level
MF = modifying factor
ORNL = Oak Ridge National Laboratory
PPRTV = provisional peer-reviewed toxicity values
RAIS = Risk Assessment Information System
RfD = reference dose
UF = uncertainty factor

Table 3-22. Chronic Oral Reference Doses for Organic Chemicals. (3 Pages)

Chemical	Oral RfD (mg/kg-day)	Species	Critical Effect	UF	MF	Source	Notes
2-Methylnaph-thalene	4.00E-03	Mouse	Pulmonary alveolar proteinosis	1,000	1	IRIS 2009	Tier 1 (IRIS)
Acenaphthene	6.00E-02	Mouse	Hepatotoxicty	3,000	1	IRIS 2009	Tier 1 (IRIS)
Acenaphthylene	6.00E-02	--	--	--	--	--	Tier 1 (IRIS) surrogate; acenaphthene, structural similarity
Acetone	9.00E-01	Rat	Nephropathy	1,000	1	IRIS 2009	Tier 1 (IRIS)
Aldrin	3.00E-05	Rat	Liver toxicity	1,000	1	IRIS 2009	Tier 1 (IRIS)
Anthracene	3.00E-01	Mouse	No observed effects	3,000	1	IRIS 2009	Tier 1 (IRIS)
Aroclor-1248	2.00E-05	--	--	--	--	--	Tier 1 (IRIS) surrogate; Aroclor-1254, structural similarity
Aroclor-1254	2.00E-05	Monkey	Ocular exudates, inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	300	1	IRIS 2009	Tier 1 (IRIS)
Aroclor-1260	2.00E-05	--	--	--	--	--	Tier 1 (IRIS) surrogate; Aroclor 1254, structural similarity
Aroclor-1262	2.00E-05	--	--	--	--	--	Tier 1 (IRIS) surrogate; Aroclor 1254, structural similarity
Benzo[a]-anthraxcene	--	--	--	--	--	--	No data
Benzo[a]pyrene	--	--	--	--	--	--	No data
Benzo[b]-fluoranthene	--	--	--	--	--	--	No data
Benzo[ghi)perilene	3.00E-02	--	--	--	--	--	Tier 1 (IRIS) surrogate; pyrene, structural similarity
Benzo[k]-fluoranthene	--	--	--	--	--	--	No data
beta-1,2,3,4,5,6-Hexachlorocyclo-hexane	3.00E-04	--	--	--	--	IRIS 2009	Tier 1 (IRIS) value for gamma-BHC used as a surrogate due to structural similarity

Table 3-22. Chronic Oral Reference Doses for Organic Chemicals. (3 Pages)

Chemical	Oral RfD (mg/kg-day)	Species	Critical Effect	UF	MF	Source	Notes
Bis[2-ethylhexy] phthalate	2.00E-02	Guinea pig	Increased relative liver weight	1,000	1	IRIS 2009	Tier 1 (IRIS)
Carbon tetrachloride	7.00E-04	Rat	Liver lesions	1,000	1	IRIS 2009	Tier 1 (IRIS)
Chlordane	5.00E-04	Mouse	Hepatic necrosis; chlordane (technical)	300	1	IRIS 2009	Tier 1 (IRIS)
Chloroform	1.00E-02	Dog	Moderate/marked fatty cyst formation in the liver and elevated serum glutamic pyruvic transaminase	100	1	IRIS 2009	Tier 1 (IRIS)
Chrysene	--	--	--	--	--	--	No data
cis-1,2-Dichloro-ethene	1.00E-02	--	--	--	--	ORNL Database, 2008	Tier 2 (PPRTV)
Dibenz[a,h]-anthraxcene	--	--	--	--	--	--	No data
Dichlorodiphenyl-dichloroethylene	--	--	--	--	--	--	No data
Dichlorodiphenyl-trichloroethane	5.00E-04	Rat	Liver lesions	100	1	IRIS 2009	Tier 1 (IRIS)
Dichloroprop	8.00E-03	Dog	Internal hemorrhage; mortality	1,000	1	IRIS 2009	Tier 1 (IRIS) surrogate; 4-(2,4-dichlorophenoxy) butyric acid for 2-(2,4-dichlorophenoxy) proprionic acid
Dieldrin	5.00E-05	Rat	Liver lesions	100	1	IRIS 2009	Tier 1 (IRIS)
Endosulfan I and II	6.00E-03	Rat	Reduced body weight gain in males and females; increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (other effect: decreased weight gain in males and neurologic findings in both sexes.)	100	1	IRIS 2009	Tier 1 (IRIS) surrogate; endosulfan, endosulfan I and II are isomers of endosulfan
Endosulfan sulfate	6.00E-03	--	--	--	--	--	Tier 1 (IRIS) surrogate; endosulfan, structural similarity
Endrin aldehyde	3.00E-04	Dog	Mild histological liver lesions	100	1	IRIS 2009	Tier 1 (IRIS) surrogate; endrin, structural similarity
Ethylene glycol	2.00E+00	Rat	Kidney toxicity	100	1	IRIS 2009	Tier 1 (IRIS)

Table 3-22. Chronic Oral Reference Doses for Organic Chemicals. (3 Pages)

Chemical	Oral RfD (mg/kg-day)	Species	Critical Effect	UF	MF	Source	Notes
Fluoranthene	4.00E-02	Mouse	Nephropathy, increased liver weights, hematological alterations, and clinical effects	3,000	1	IRIS 2009	Tier 1 (IRIS)
Fluorene	4.00E-02	Mouse	Decreased red blood cells, packed cell volume and hemoglobin	3,000	1	IRIS 2009	Tier 1 (IRIS)
Indeno[1,2,3-cd]-pyrene	--	--	--	--	--	--	No data
Methoxychlor	5.00E-03	Rabbit	Excessive loss of litters	1,000	1	IRIS 2009	Tier 1 (IRIS)
Methylenechloride	6.00E-02	Rat	Liver toxicity	100	1	IRIS 2009	Tier 1 (IRIS)
Naphthalene	2.00E-02	Rat	Decreased mean terminal body weight in males	3,000	1	IRIS 2009	Tier 1 (IRIS)
Phenanthrene	3.00E-02	--	--	--	--	IRIS 2009	Tier 1 (IRIS) surrogate; pyrene, structural similarity
Phenol	3.00E-01	Rat	Decreased maternal weight gain	300	1	IRIS 2009	Tier 1 (IRIS)
Pyrene	3.00E-02	Mouse	Kidney effects (renal tubular pathology, decreased kidney weights)	3,000	1	IRIS 2009	Tier 1 (IRIS)
Tetrachloroethene	1.00E-02	Mouse/rat	Hepatotoxicity in mice, weight gain in rats	1,000	1	IRIS 2009	Tier 1 (IRIS)
Tributyl phosphate	2.00E-01	--	--	--	--	ORNL Database, 2008	Tier 2 (PPRTV)
Trichloroethene	--	--	--	--	--	--	No data

-- = not applicable
BHC = benzene hexachloride
IgG = immunoglobulin G
IgM = immunoglobulin M
IRIS = Integrated Risk Information System
MF = modifying factor
ORNL = Oak Ridge National Laboratory
PPRTV = provisional peer-reviewed toxicity values
RfD = reference dose
UF = uncertainty factor

Table 3-23. Chronic Inhalation Reference Concentrations for Inorganic Chemicals. (2 Pages)

Chemical	Inhalation RfC (mg/m^3)	Inhalation RfD (mg/kg-day)	Species	Critical Effect	UF	MF	Source	Notes
Aluminum	5.00E-03	1.43E-03	--	--	--	--	ORNL Database, 2008	Tier 2 (PPRTV)
Antimony	2.0E-04	5.7E-05	Rat	Pulmonary toxicity, chronic interstitial inflammation	300	1	IRIS 2009	Tier 1 (IRIS)
Arsenic	--	--	--	--	--	--	--	California EPA value not used; inhalation route addressed with unit risk
Barium	5.00E-04	1.43E-04	Rat	Fetotoxicity	1,000	1	ORNL Database, 2008	Tier 3 (HEAST)
Beryllium	2.0E-05	5.71E-06	Human	Sensitization; chronic beryllium disease	10	1	IRIS 2009	Tier 1 (IRIS)
Boron	2.00E-02	5.71E-03	Human	Respiratory tract bronchus irritation; bronchitis	100	1	ORNL Database, 2008	Tier 3 (HEAST)
Cadmium	--	--	--	--	--	--	--	No data
Chromium	--	--	--	--	--	--	--	No data
Hexavalent chromium	1.00E-04	2.86E-05	Rat	Lactate dehydrogenase in bronchioalveolar lavage fluid; Cr(VI) particulates	300	1	IRIS 2009	Tier 1 (IRIS); particulate matter
Cobalt	2.00E-05	5.71E-06	--	--	--	--	ORNL RAIS 2008	Tier 2 (PPRTV)
Copper	--	--	--	--	--	--	--	No data
Fluoride	--	--	--	--	--	--	--	No data
Iron	--	--	--	--	--	--	--	No data
Lead	--	--	--	--	--	--	--	See Section 5.5.8
Manganese	5.00E-05	1.4E-05	Human	Impairment of neurobehavioral function	1,000	1	IRIS 2009	Tier 1 (IRIS); manganese oxides and salts
Mercury	3.00E-04	8.57E-05	Human	Hand tremor; increases in memory disturbances; slight subjective and objective evidence of autonomic dysfunction	30	1	IRIS 2009	Tier 1 (IRIS) ; elemental Hg
Nickel	--	--	--	--	--	--	--	No data
Nitrogen in	--	--	--	--	--	--	--	No data

Table 3-23. Chronic Inhalation Reference Concentrations for Inorganic Chemicals. (2 Pages)

Chemical	Inhalation RfC (mg/m^3)	Inhalation RfD (mg/kg-day)	Species	Critical Effect	UF	MF	Source	Notes
nitrate								
Nitrogen in nitrite	--	--	--	--	--	--	--	No data
Selenium	2.00E-02	5.71E-03	--	--	--	--	ORNL Database, 2008	Tier 3 (California EPA)
Silver	--	--	--	--	--	--	--	No data
Strontium (elemental)	--	--	--	--	--	--	--	No data
Tin	--	--	--	--	--	--	--	No data
Uranium (inorganic)	--	--	--	--	--	--	--	No data
Vanadium	--	--	--	--	--	--	--	No data
Zinc	--	--	--	--	--	--	--	No data

-- = not applicable
EPA = U.S. Environmental Protection Agency
HEAST = Health Effects Assessment Summary Tables
IRIS = Integrated Risk Information System
MF = modifying factor
ORNL = Oak Ridge National Laboratory
PPRTV = provisional peer-reviewed toxicity values
RfC = reference concentration
RfD = reference dose
UF = uncertainty factor

Table 3-24. Chronic Inhalation Reference Concentrations for Organic Chemicals. (4 Pages)

Chemical	Inhalation RfC (mg/m^3)	Inhalation RfD (mg/kg-day)	Species	Critical Effect	UF	MF	Source	Notes
2-Methylnaph-thalene	--	--	--	--	--	--	--	No data
Acenaphthene	--	--	--	--	--	--	--	No data
Acenaphthylene	--	--	--	--	--	--	--	No data
Acetone	3.1E+01	8.9E+00		Neurological	100	--	ATSDR 2008	ATSDR chronic minimal risk level = 13 ppm
Aldrin	--	--	--	--	--	--	--	No data
Anthracene	--	--	--	--	--	--	--	No data
Aroclor 1248	--	--	--	--	--	--	--	No data
Aroclor 1254	--	--	--	--	--	--	--	No data
Aroclor 1260	--	--	--	--	--	--	--	No data
Aroclor 1262	--	--	--	--	--	--	--	No data
Benzo[a]-anthraxcene	--	--	--	--	--	--	--	No data
Benzo[a]pyrene	--	--	--	--	--	--	--	No data
Benzo[b]-fluoranthene	--	--	--	--	--	--	--	No data
Benzo[ghi)-perilene	--	--	--	--	--	--	--	No data
Benzo[k]-fluoranthene	--	--	--	--	--	--	--	No data
beta-1,2,3,4,5,6-Hexachloro-cyclohexane	--	--	--	--	--	--	--	No data
Bis[2-ethylhexy] phthalate	--	--	--	--	--	--	--	No data

Table 3-24. Chronic Inhalation Reference Concentrations for Organic Chemicals. (4 Pages)

Chemical	Inhalation RfC (mg/m^3)	Inhalation RfD (mg/kg-day)	Species	Critical Effect	UF	MF	Source	Notes
Carbon tetrachloride	--	--	--	--	--	--	--	Tier 3 (NCEA and ATSDR) inhalation RfD not used; inhalation route addressed with unit risk
Chlordane	7.00E-04	2.00E-04	Rat	Hepatic effects; chlordane (technical)	1,000	1	IRIS 2009	Tier 1 (IRIS)
Chloroform	--	--	--	--	--	--	--	Tier 3 (NCEA and ATSDR) inhalation RfD not used; inhalation route addressed with unit risk
Chrysene	--	--	--	--	--	--	--	No data
cis-1,2-Dichloro-ethene	7.0E-01	2.00E-02	--	--	--	--	ORNL Database, 2008	Tier 2 (PPRTV). trans-1,2-Dichloroethene isomer used as a toxicity surrogate. Both isomers are strong inhibitors of liver enzyme activity
Dibenz[a,h]-anthracene	--	--	--	--	--	--	--	No data
Dichlorodiphenyl dichloroethylene	--	--	--	--	--	--	--	No data
Dichlorodiphenyl trichloroethane	--	--	--	--	--	--	--	No data
Dichloroprop	--	--	--	--	--	--	--	No data
Dieldrin	--	--	---	--	--	--	--	No data
Endosulfan I and II	--	--	--	--	--	--	--	No data
Endosulfan sulfate	--	--	--	--	--	--	--	No data

Table 3-24. Chronic Inhalation Reference Concentrations for Organic Chemicals. (4 Pages)

Chemical	Inhalation RfC (mg/m^3)	Inhalation RfD (mg/kg-day)	Species	Critical Effect	UF	MF	Source	Notes
Endrin aldehyde	--	--	--	--	--	--	--	No data
Ethylene glycol	4.0E-01	1.1E-01	--	--	--	--	ORNL Database, 2008	Tier 3 (California EPA)
Fluoranthene	--	--	--	--	--	--	--	No data
Fluorene	--	--	--	--	--	--	--	No data
Indeno[1,2,3-cd] pyrene	--	--	--	--	--	--	--	No data
Methoxychlor	--	--	--	--	--	--	--	No data
Methylene-chloride	--	--	--	--	--	--	--	Tier 3 (NCEA and ATSDR) inhalation RfD not used; inhalation route addressed with unit risk
Naphthalene	3.00E-03	8.57E-04	Mouse	Nasal effects: hyperplasia and metaplasia in respiratory and olfactory epithelium, respectively	3,000	1	IRIS 2009	Tier 1 (IRIS)
Phenanthrene	--	--	--	--	--	--	--	No data
Phenol	2.0E-01	5.7E-02	--	--	--	--	ORNL Database, 2008	Tier 3 (California EPA)
Pyrene	--	--	--	--	--	--	--	No data
Tetrachloro-ethene	--	--	--	--	--	--	--	Tier 3 (NCEA and ATSDR) inhalation RfD not used; inhalation route addressed with unit risk
Tributyl phosphate	--	--	--	--	--	--	--	No data

Table 3-24. Chronic Inhalation Reference Concentrations for Organic Chemicals. (4 Pages)

Chemical	Inhalation RfC (mg/m^3)	Inhalation RfD (mg/kg-day)	Species	Critical Effect	UF	MF	Source	Notes
Trichloroethene	--	--	--	--	--	--	--	No data

-- = not applicable
ATSDR = Agency for Toxic Substances and Disease Registry
EPA = U.S. Environmental Protection Agency
IRIS = Integrated Risk Information System
MF = modifying factor
NCEA = National Center for Environmental Assessment
ORNL = Oak Ridge National Laboratory
RfC = reference concentration
RfD = reference dose
UF = uncertainty factor

ATSDR, 2008, Toxilogical Profile for Acetone, Online at http://www.atsdr.cdc.gov/toxprofiles/tp21.html#bookmark1_1, Agency for Toxic Substances and Disease Registry, Atlanta, Georgia.

Table 3-25. Oral Slope Factors for Inorganic Chemicals. (2 Pages)

Chemical	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Aluminum	--	--	--	--	--	No data
Antimony	--	--	--	--	--	No data
Arsenic	1.5	Human	Skin cancer	Multistage, with time	IRIS 2007	Tier 1 (IRIS)
Barium	--	--	--	--	--	No data
Beryllium	--	--	--	--	--	No data
Boron	--	--	--	--	--	No data
Cadmium	--	--	--	--	--	No data
Chromium	--	--	--	--	--	No data
Hexavalent chromium	--	--	--	--	--	No data
Cobalt	--	--	--	--	--	No data
Copper	--	--	--	--	--	No data
Fluoride	--	--	--	--	--	No data
Iron	--	--	--	--	--	No data
Lead	--	--	--	--	--	See Section 5.5.8
Manganese	--	--	--	--	--	No data
Mercury	--	--	--	--	--	No data
Nickel	--	--	--	--	--	No data
Nitrogen in nitrate	--	--	--	--	--	No data
Nitrogen in nitrite	--	--	--	--	--	No data
Selenium	--	--	--	--	--	No data
Silver	--	--	--	--	--	No data
Strontium (elemental)	--	--	--	--	--	No data
Tin	--	--	--	--	--	No data

Table 3-25. Oral Slope Factors for Inorganic Chemicals. (2 Pages)

Chemical	Oral Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Uranium (inorganic)	--	--	--	--	--	No data
Vanadium	--	--	--	--	--	No data
Zinc	--	--	--	--	--	No data

-- = not applicable
IRIS = Integrated Risk Information System

Table 3-26. Oral Slope Factors for Organic Chemicals. (5 Pages)

Chemical	Oral Cancer Slope Factor $(mg/kg/day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
2-Methylnaphthalene	--	--	--	--	--	No data
Acenaphthene	--	--	--	--	--	No data
Acenaphthylene	--	--	--	--	--	No data
Acetone	--	--	--	--	--	No data
Aldrin	1.70E+01	Mouse	Liver carcinoma	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Anthracene	--	--	--	--	--	No data
Aroclor-1248	2.00E+00 (soil; food) 4.0E-01 (water)	Rat	See Aroclor-1242	See Aroclor-1242	IRIS 2009	Tier 1 (IRIS) surrogate; total PCBs. See Section 5.4.9 for PCB congener carcinogenicity
Aroclor-1254	2.00E+00 (soil; food) 4.0E-01 (water)	Rat	See Aroclor-1242	See Aroclor-1242	IRIS 2009	Tier 1 (IRIS) surrogate; total PCBs. See Section 5.4.9 for PCB congener carcinogenicity
Aroclor-1260	2.00E+00 (soil; food) 4.0E-01 (water)	Rat	See Aroclor-1242	See Aroclor-1242	IRIS 2009	Tier 1 (IRIS) surrogate; total PCBs. See Section 5.4.9 for PCB congener carcinogenicity
Aroclor-1262	2.00E+00 (soil; food) 4.0E-01 (water)	Rat	See Aroclor-1242	See Aroclor-1242	IRIS 2009	Tier 1 (IRIS) surrogate; total PCBs. See Section 5.4.9 for PCB congener carcinogenicity
Benzo[a]anthracene	7.30E-01 (adult) 1.85 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA TEF value applied to benzo(a)pyrene IRIS SF)

Table 3-26. Oral Slope Factors for Organic Chemicals. (5 Pages)

Chemical	Oral Cancer Slope Factor $(mg/kg/day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Benzo[a]pyrene	7.30E+00 (adult) 18.5 (child + adult)	Mouse/ rat	Forestomach, squamous cell papillomas and carcinomas; forestomach, larynx and esophagus, papillomas and carcinomas (combined)	Risk estimate based on a geometric mean of four slope factors obtained by different modeling procedures	IRIS 2009	Tier 1 (IRIS). Adjustment factors (EPA 2006) of 10 (ages birth to < 2 years) and 3 (ages 2 to <16 years) are applied over a default 30-year exposure period [a]
Benzo[b]fluoranthene	7.30E-01 (adult) 1.85 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA TEF value applied to benzo(a)pyrene IRIS SF)
Benzo[ghi)perylene	--	--	--	--	--	Route is covered by Tier 1 (IRIS) oral RfD for surrogate; pyrene
Benzo[k]fluoranthene	7.30E-01 (adult) 1.85 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA TEF value applied to benzo(a)pyrene IRIS SF)
beta-1,2,3,4,5,6-Hexa-chlorocyclohexane	1.80E+00	Mouse	Hepatic nodules and hepatocellular carcinoma	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Bis[2-ethylhexy] phthalate	1.40E-02	Mouse	--	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Carbon tetrachloride	1.30E-01	Hamster/ Syrian	Hepatocellular carcinomas/hepatomas	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)

Table 3-26. Oral Slope Factors for Organic Chemicals. (5 Pages)

Chemical	Oral Cancer Slope Factor $(mg/kg/day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Chlordane	3.50E-01	Mouse	Hepatocellular carcinoma	Linearized multistage procedure, extra risk; chlordane (technical)	IRIS 2009	Tier 1 (IRIS)
Chloroform	3.1E-02	--	--	--	ORNL Database, 2008	Tier 3 (California EPA)
Chrysene	7.30E-02 (adult) 0.185 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA TEF value applied to benzo(a)pyrene IRIS SF)
cis-1,2-Dichloroethene	--	--	--	--	--	No data
Dibenz[a,h]anthracene	4.1E+00 (adult) 10.4 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA). Adjustment factors (EPA 2006) of 10 (ages birth to < 2 years) and 3 (ages 2 to <16 years) are applied over a default 30-year exposure period
Dichlorodiphenyldi-chloroethylene	3.40E-01	Mouse	Hepatocellular carcinomas, hepatomas	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Dichlorodiphenyltri-chloroethane	3.40E-01	Mouse; rat	Liver tumors, benign and malignant	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Dichloroprop	--	--	--	--	--	No data
Dieldrin	1.60E+01	Mouse	Liver carcinoma	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)

Table 3-26. Oral Slope Factors for Organic Chemicals. (5 Pages)

Chemical	Oral Cancer Slope Factor $(mg/kg/day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Endosulfan I and II	--	--	--	--	--	No data
Endosulfan sulfate	--	--	--	--	--	No data
Endrin aldehyde	--	--	--	--	--	No data
Ethylene glycol	--	--	--	--	--	No data
Fluoranthene	--	--	--	--	--	No data
Fluorene	--	--	--	--	--	No data
Indeno[1,2,3-cd]pyrene	7.30E-01 (adult) 1.85 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA TEF value applied to benzo(a)pyrene IRIS SF)
Methoxychlor	--	--	--	--	--	No data
Methylenechloride	7.50E-03	Mouse	Hepatocellular adenomas or carcinomas and hepatocellular cancer and neoplastic nodules	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Naphthalene	--	--	--	--	--	No data
Phenanthrene	--	--	--	--	--	No data
Phenol	--	--	--	--	--	No data
Pyrene	--	--	--	--	--	No data
Tetrachloroethene	5.4E-01	--	--	--	ORNL Database, 2008	Tier 3 (California EPA). Recommended for use by EPA (OSWER 9285.7-53)
Tributyl phosphate	5.4E-03	--	--	--	ORNL Database, 2008	Tier 2 (PPRTV)

Table 3-26. Oral Slope Factors for Organic Chemicals. (5 Pages)

Chemical	Oral Cancer Slope Factor $(mg/kg/day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Trichloroethene	1.3E-02	--	--	--	ORNL Database, 2008	Tier 3 (California EPA)

[a] Age-adjusted CSF of 18.5 $(mg/kg\text{-}day)^{-1}$ calculated as [(2yr / 30yr) * 73 $(mg/kg\text{-}day)^{-1}$] + [(14yr / 30yr) * 21.9 $(mg/kg\text{-}day)^{-1}$] + [(14yr / 30yr) * 7.3 $(mg/kg\text{-}day)^{-1}$].

-- = not applicable
CSF = cancer slope factor
EPA = U.S. Environmental Protection Agency
IRIS = Integrated Risk Information System
ORNL = Oak Ridge National Laboratory
PCB = polychlorinated biphenyl
PPRTV = provisional peer-reviewed toxicity values
SF = slope factor
TEF = toxicity equivalency factor

California EPA, 2005, *Air Toxics Hot Spots Program Risk Assessment Guidelines, Part II: Technical Support Document for Describing Available Cancer Potency Factors*, Office of Environmental Health hazard Assessment, California Environmental Protection Agency, Sacramento, California.

EPA, 2006, "Implementation of the Cancer Guidelines and Accompanying Supplemental Guidance – Science Policy Council Cancer Guidelines Implementation Workgroup Communication II: Performing Risk Assessments that include Carcinogens Described in the Supplemental Guidance as having a Mutagenic Mode of Action," Memorandum from W. H. Farland, Chief Scientist, Office of the Science Advisor, to Science Policy Council and Science Policy Council Steering Committee, U.S. Environmental Protection Agency, Washington, D.C., June 14.

OSWER 9285.7-53, 2003, "Human Health Toxicity Values in Superfund Risk Assessments," Memorandum from M. B. Cook, Director of the Office of Superfund Remediation and Technology Innovation, to Superfund National Policy Managers, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

Table 3-27. Inhalation Unit Risk and Slope Factor Values for Inorganic Chemicals. (2 Pages)

Chemical	Unit Risk $(\mu g/m^3)^{-1}$	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Aluminum	--	--	--	--	--	--	No data
Antimony	--	--	--	--	--	--	No data
Arsenic	0.0043	15.1	Human	Lung cancer	Absolute risk, linear model	IRIS 2009	Tier 1 (IRIS)
Barium	--	--	--	--	--	--	No data
Beryllium	0.0024	8.4	Human	Lung cancer	Relative risk	IRIS 2009	Tier 1 (IRIS)
Boron	--	--	--	--	--	--	No data
Cadmium	0.0018	6.3	Human	Lung, trachea, bronchus cancer deaths	Two stage; only first affected by exposure; extra risk	IRIS 2009	Tier 1 (IRIS)
Chromium	--	--	--	--	--	--	No data
Hexavalent chromium	0.012	42	Human	Lung cancer	Multi-stage, extra risk	IRIS 2009	Tier 1 (IRIS)
Cobalt	0.0028	9.8	--	--	--	ORNL RAIS 2008	Tier 2 (PPRTV)
Copper	--	--	--	--	--	--	No data
Fluoride	--	--	--	--	--	--	No data
Lead	--	--	--	--	--	--	See Section 5.5.8
Manganese	--	--	--	--	--	--	No data
Mercury	--	--	--	--	--	--	No data
Nickel	--	--	--	--	--	--	No data
Nitrogen in nitrate	--	--	--	--	--	--	No data
Nitrogen in nitrite	--	--	--	--	--	--	No data
Selenium	--	--	--	--	--	--	No data
Silver	--	--	--	--	--	--	No data
Strontium (elemental)	--	--	--	--	--	--	No data
Tin	--	--	--	--	--	--	No data
Uranium (inorganic)	--	--	--	--	--	--	No data
Vanadium	--	--	--	--	--	--	No data

Table 3-27. Inhalation Unit Risk and Slope Factor Values for Inorganic Chemicals. (2 Pages)

Chemical	Unit Risk $(\mu g/m^3)^{-1}$	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Zinc	--	--	--	--	--	--	No data

-- = not applicable
IRIS = Integrated Risk Information System
ORNL = Oak Ridge National Laboratory
PPRTV = provisional peer-reviewed toxicity values
RAIS = Risk Assessment Information System

Table 3-28. Inhalation Unit Risk and Slope Factor Values for Organic Chemicals. (5 Pages)

Chemical	Unit Risk $(\mu g/m^3)^{-1}$	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
2-Methylnaphthalene	--	--	--	--	--	--	No data
Acenaphthene	--	--	--	--	--	--	No data
Acenaphthylene	--	--	--	--	--	--	No data
Acetone	--	--	--	--	--	--	No data
Aldrin	4.90E-03	1.72E+01	Mouse	Liver carcinoma	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Anthracene	--	--	--	--	--	--	Route is covered by Tier 1 (IRIS) route extrapolation
Aroclor-1248	1.1E-04 (water) 5.7E-04 (dust)	4.0E-01 (water) 2.0E+00 (dust)	Rat	See Aroclor-1242	See Aroclor-1242	IRIS 2009	Tier 1 (IRIS); total PCBs. See Section 5.4.9 for PCB congener carcinogenicity
Aroclor-1254	1.1E-04 (water) 5.7E-04 (dust)	4.0E-01 (water) 2.0E+00 (dust)	Rat	See Aroclor-1242	See Aroclor-1242	IRIS 2009	Tier 1 (IRIS); total PCBs. See Section 5.4.9 for PCB congener carcinogenicity
Aroclor-1260	1.1E-04 (water) 5.7E-04 (dust)	4.0E-01 (water) 2.0E+00 (dust)	Rat	See Aroclor-1242	See Aroclor-1242	IRIS 2009	Tier 1 (IRIS); total PCBs. See Section 5.4.9 for PCB congener carcinogenicity
Aroclor-1262	1.1E-04 (water) 5.7E-04 (dust)	4.0E-01 (water) 2.0E+00 (dust)	Rat	See Aroclor-1242	See Aroclor-1242	IRIS 2009	Tier 1 (IRIS); total PCBs. See Section 5.4.9 for PCB congener carcinogenicity

Table 3-28. Inhalation Unit Risk and Slope Factor Values for Organic Chemicals. (5 Pages)

Chemical	Unit Risk $(\mu g/m^3)^{-1}$	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Benzo[a]anthracene	1.1E-04 (adult) 2.8E-04 (child + adult)	3.9E-01 (adult) 0.98 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA TEF value applied to benzo(a)pyrene California EPA URF)
Benzo[a]pyrene	1.1E-03 (adult) 2.8E-03 (child + adult)	3.9E+00 (adult) 9.8 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA). Adjustment factors (EPA 2006b) of 10 (ages birth to < 2 years) and 3 (ages 2 to <16 years) are applied over a default 30-year exposure period [a]
Benzo[b]fluoranthene	1.1E-04 (adult) 2.8E-04 (child + adult)	3.9E-01 (adult) 0.988 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA TEF value applied to benzo(a)pyrene California EPA URF)
Benzo[ghi)perylene	--	--	--	--	--	--	No data
Benzo[k]fluoranthene	1.1E-04 (adult) 2.8E-04 (child + adult)	3.9E-01 (adult) 0.98 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA TEF value applied to benzo(a)pyrene California EPA URF)
beta-1,2,3,4,5,6-Hexa-chlorocyclohexane	5.30E-04	1.86E+00	Mouse	Hepatic nodules and hepatocellular carcinomas	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Bis[2-ethylhexy] phthalate	--	--	--	--	--	--	No data

Table 3-28. Inhalation Unit Risk and Slope Factor Values for Organic Chemicals. (5 Pages)

Chemical	Unit Risk $(\mu g/m^3)^{-1}$	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Carbon tetrachloride	1.50E-05	5.25E-02	Hamster, Syrian	Hepatocellular carcinomas/ hepatomas	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Chlordane	1.00E-04	3.50E-01	Mouse	Hepatocellular carcinoma; chlordane (technical)	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Chloroform	2.30E-05	8.05E-02	Mouse	Hepatocellular carcinoma	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Chrysene	1.1E-05 (adult) 2.8E-05 (child + adult)	3.9E-02 (adult) 0.098 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA TEF value applied to benzo(a)pyrene California EPA URF)
cis-1,2-Dichloroethene	--	--	--	--	--	--	No data
Dibenz[a,h]anthracene	1.2E-03 (adult) 3.0E-03 (child + adult)	4.2E+00 (adult) 10.6 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA). Adjustment factors (EPA 2006) of 10 (ages birth to <2 years) and 3 (ages 2 to <16 years) are applied over a default 30-year exposure period
Dichlorodiphenyldi-chloroethylene	--	--	--	--	--	--	No data
Dichlorodiphenyltri-chloroethane	9.70E-05	3.40E-01	Mouse/ rat	Liver tumors, benign and malignant	Linear multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)

Table 3-28. Inhalation Unit Risk and Slope Factor Values for Organic Chemicals. (5 Pages)

Chemical	Unit Risk $(\mu g/m^3)^{-1}$	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Dichloroprop	--	--	--	--	--	--	No data
Dieldrin	4.60E-03	1.61E+01	Mouse	Liver carcinoma	Linearized multistage procedure	IRIS 2009	Tier 1 (IRIS)
Endosulfan I and II	--	--	--	--	--	--	No data
Endosulfan sulfate	--	--	--	--	--	--	No data
Endrin aldehyde	--	--	--	--	--	--	No data
Ethylene glycol	--	--	--	--	--	--	No data
Fluoranthene	--	--	--	--	--	--	No data
Fluorene	--	--	--	--	--	--	No data
Indeno[1,2,3-cd]pyrene	1.1E-04 (adult) 2.8E-04 (child + adult)	3.9E-01 (adult) 0.98 (child + adult)	--	--	--	California EPA 2005	Tier 3 (California EPA TEF value applied to benzo(a)pyrene California EPA SF)
Methoxychlor	--	--	--	--	--	--	No data
Methylenechloride	4.70E-07	1.65E-03	Mouse	Combined adenomas and carcinomas	Linearized multistage procedure, extra risk	IRIS 2009	Tier 1 (IRIS)
Naphthalene	--	--	--	--	--	IRIS 2009	Genotoxicity is “unlikely” and respiratory tumors were only observed at a high dose level in rodent studies
Phenanthrene	--	--	--	--	--	--	No data
Phenol	--	--	--	--	--	--	No data
Pyrene	--	--	--	--	--	--	No data

Table 3-28. Inhalation Unit Risk and Slope Factor Values for Organic Chemicals. (5 Pages)

Chemical	Unit Risk $(\mu g/m^3)^{-1}$	Inhalation Cancer Slope Factor $(mg/kg\text{-}day)^{-1}$	Species	Tumors Observed	Dose-Response Model	Source	Notes
Tetrachloroethene	5.9E-06	5.4E-01	--	--	--	ORNL Database, 2008	Tier 3 (California EPA). Recommended for use by EPA (OSWER 9285.7-53)
Tributyl phosphate	--	--	--	--	--	--	No data
Trichloroethene	2.0E-06	7.0E-03	--	--	--	ORNL Database, 2008	Tier 3 (California EPA)

[a] Age-adjusted unit risk of 2.8 $(\mu g/m^3)^{-1}$ is calculated as $[(2yr / 30yr) * 11 (\mu g/m^3)^{-1}] + [(14yr / 30yr) * 3.6 (\mu g/m^3)^{-1}] + [(14yr / 30yr) * 1.1 (\mu g/m^3)^{-1}]$.

-- = not applicable
EPA = U.S. Environmental Protection Agency
IRIS = Integrated Risk Information System
PCB = polychlorinated biphenyl
SF = slope factor
TEF = toxicity equivalency factor
URF = unit risk factor

California EPA, 2005, *Air Toxics Hot Spots Program Risk Assessment Guidelines, Part II: Technical Support Document for Describing Available Cancer Potency Factors*, Office of Environmental Health hazard Assessment, California Environmental Protection Agency, Sacramento, California.

OSWER 9285.7-53, 2003, "Human Health Toxicity Values in Superfund Risk Assessments," Memorandum from M. B. Cook, Director of the Office of Superfund Remediation and Technology Innovation, to Superfund National Policy Managers, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C.

Table 3-29. Radionuclide Cancer Slope Factors.

Radionuclide	Slope Factor Includes Progeny?	Half-Life (yr)	Soil Ingestion Slope Factor (risk/pCi)	Food Ingestion Slope Factor (risk/pCi)	Water Ingestion Slope Factor (risk/pCi)	Inhalation Slope Factor (risk/pCi)	External Slope Factor (risk/yr per pCi/g)
Carbon-14	No	5715	2.79E-12	2.00E-12	1.55E-12	7.07E-12	7.83E-12
Cesium-137	Yes	30.07	4.33E-11	3.74E-11	3.04E-11	1.19E-11	2.55E-06
Cobalt-60	No	5.271	4.03E-11	2.23E-11	1.57E-11	3.58E-11	1.24E-05
Europium-152	No	13.54	1.62E-11	8.70E-12	6.07E-12	9.10E-11	5.30E-06
Europium-154	No	8.593	2.85E-11	1.49E-11	1.03E-11	1.15E-10	5.83E-06
Nickel-63	No	101	1.79E-12	9.51E-13	6.70E-13	1.64E-12	0.00E+00
Plutonium-239/240	No	24100	2.76E-10	1.74E-10	1.35E-10	3.33E-08	2.00E-10
Strontium-90	Yes	28.78	1.44E-10	9.53E-11	7.40E-11	1.13E-10	1.96E-08
Technetium-99	No	2.13E+05	7.66E-12	4.00E-12	2.75E-12	1.41E-11	8.14E-11
Tritium [a]	No	12.32	2.2E-13	1.44E-13	1.12E-13	1.99E-13	0.00E+00
Uranium-233/234 [b]	No	2.46E+05	1.58E-10	9.55E-11	7.07E-11	1.14E-08	2.52E-10
Uranium-235	Yes	7.04E+08	1.63E-10	9.76E-11	7.18E-11	1.01E-08	5.43E-07
Uranium-238	Yes	4.47E+09	2.1E-10	1.21E-10	8.7E-11	9.35E-09	1.14E-07

Half-life: *Chart of the Nuclides*, 16th Edition, Knolls Atomic Power Laboratory, 2002.

[a] Slope factors are the more protective values relating to organically-bound tritium.

[b] Slope factors pertain to uranium-234.

Table 3-30. Radionuclide Dose Conversion Factors.

Radionuclide	Dose Conversion Factor Includes Progeny?	Half-Life (yr)	Adult Ingestion Dose Conversion Factor (mrem/pCi)	1-to 30-Yr Ingestion Dose Conversion Factor (mrem/pCi)	Adult Inhalation Dose Conversion Factor (mrem/pCi)	1-to 30-Yr Inhalation Dose Conversion Factor (mrem/pCi)	External Dose Conversion Factor (mrem/yr per pCi/g)
Carbon-14	No	5,715	2.1E-06	2.8E-06	2.1E-05	2.9E-05	7.83E-12
Cesium-137	Yes	30.07	4.8E-05	1.9E-04	1.9E-04	3.2E-05	2.55E-06
Cobalt-60	No	5.271	1.3E-05	1.6E-04	1.1E-04	2.2E-04	1.24E-05
Europium-152	No	13.54	5.2E-06	1.9E-04	1.6E-04	2.2E-04	5.30E-06
Europium-154	No	8.593	7.4E-06	2.6E-04	2.0E-04	2.9E-04	5.83E-06
Nickel-63	No	101	5.6E-07	1.2E-05	7.4E-06	6.3E-06	0.00E+00
Plutonium-239/240	No	24,100	9.3E-04	4.8E-01	4.4E-01	4.3E-01	2.00E-10
Strontium-90	Yes	28.78	1.1E-04	7.5E-04	6.0E-04	1.3E-03	1.96E-08
Technetium-99	No	2.13E+05	2.4E-06	6.6E-05	4.8E-05	8.3E-06	8.14E-11
Tritium	No	12.32	1.6E-07	1.5E-06	9.6E-07	6.4E-08	0.00E+00
Uranium-233/234	No	2.46E+05	1.8E-04	4.8E-02	3.5E-02	1.3E-01	2.52E-10
Uranium-235	Yes	7.04E+08	1.8E-04	4.4E-02	3.1E-02	1.2E-01	5.43E-07
Uranium-238	Yes	4.47E+09	1.8E-04	4.1E-02	3.0E-02	1.2E-01	8.66E-08

Half-life: *Chart of the Nuclides*, 16th Edition, Knolls Atomic Power Laboratory, 2002.

Table 3-31. Gastrointestinal Absorption Values for Adjusting Oral Toxicity Criteria to Dermally Absorbed Dose.

Analyte	Oral Dose Absorbed (%)
Antimony	15
Barium	7
Beryllium	0.7
Cadmium	2.5
Chromium III	1.3
Chromium VI	2.5
Lead	60
Manganese	4
Mercury (salts)	7
Nickel	4
Silver	4
Vanadium	2.6
All other metals	100

Gastrointestinal absorption factors from Exhibit 4-1 of RAGS Part E (EPA/540/R-99/005, 2004, *Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final*, OSWER 9285.7-02EP, Office of Superfund Remediation and Technology Innovation, U.S. Environmental Protection Agency, Washington, D.C.).

Table 3-32. Toxicity Equivalency Factors for Polychlorinated Biphenyl Congeners. (2 Pages)

PCB Congener (IUPAC No.)	TEF
77	0.0001
81	0.0003
105	0.00003
114	0.00003
118	0.00003
123	0.00003
126	0.1
156	0.00003
157	0.00003
167	0.00003
169	0.03

Table 3-32. Toxicity Equivalency Factors for Polychlorinated Biphenyl Congeners. (2 Pages)

PCB Congener (IUPAC No.)	TEF
189	0.00003

TEF values from Van den Berg, M., L. S. Birnbaum, M. Denison, M De Vito, W. Farland, and others, 2006, "The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds," *Toxicological Sciences* 93(2), 223-241.

IUPAC = International Union of Pure and Applied Chemistry
PCB = polychlorinated biphenyl
TEF = toxicity equivalency factor

Table 4-1. Summary of 100-B/C Area Seep Water Data for Detected Key Contaminants.

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
100-B Spring (Including Springs 37-1, 38-3, and 39-2)								
Inorganic (µg/L)								
Chromium	18	18	0	1	5.09	20.34	--	--
Nitrogen in nitrate	11	11	0	1	1,100	3,000	--	--
Uranium (inorganic)	3	3	0	1	0.776	2.35	--	--
Radionuclide (pCi/L)								
Strontium-90	17	6	11	0.353	0.094	4.53	-0.121	0.0696
Technetium-99	1	1	0	1	0.697	0.697	--	--
Tritium	17	17	0	1	264	19,600	--	--
100-B/C Outfall 2 Spring								
Inorganic (µg/L)								
Chromium	1	1	0	1	1.85	1.85	--	--
Uranium (inorganic)	1	1	0	1	0.121	0.121	--	--
Radionuclide (pCi/L)								
Technetium-99	10	9	1	0.9	1.99	10.8	0.118	0.118
Tritium	1	0	1	0	--	--	66.5	66.5

-- = not applicable

Table 4-2. Summary of 100-K Area Seep Water Data for Detected Key Contaminants.

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
100-K Spring (Including Springs 63-1, 63-2, and 77-1)								
Inorganic (µg/L)								
Chromium	1	1	0	1	66	66	--	--
Nitrate	1	1	0	1	15,000	15,000	--	--
Nitrogen in nitrate	9	9	0	1	28	6,630	--	--
Radionuclide (pCi/L)								
Strontium-90	14	6	8	0.4286	0.0348	3.25	-0.031	0.106
Technetium-99	8	4	4	0.5	0.272	2.31	-0.266	0.451
Tritium	14	11	3	0.7857	46.8	19,700	-22.1	125
Uranium-233/234	3	3	0	1	0.697	1.22	--	--
Uranium-235	3	3	0	1	0.0358	0.0388	--	--
Uranium-238	3	3	0	1	0.538	1.02	--	--

-- = not applicable

Table 4-3. Summary of 100-N Area Seep Water Data for Detected Key Contaminants. (2 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Spring 8-13								
Inorganic (µg/L)								
Chromium	4	4	0	1	13.9	14.5	--	--
Uranium (inorganic)	2	2	0	1	1.6	1.63	--	--
Radionuclide (pCi/L)								
Strontium-90	2	1	1	0.5	0.0433	0.0433	-0.0121	-0.0121
Technetium-99	2	2	0	1	0.582	0.645		
Tritium	2	2	0	1	11,300	11,400	--	--
Seep 094-1								
Inorganic (µg/L)								
Chromium	1	1	0	1	4.55	4.55	--	--
Uranium (inorganic)	1	1	0	1	0.461	0.461	--	--
Radionuclide (pCi/L)								
Strontium-90	1	0	1	0	--	--	0.0156	0.0156
Technetium-99	1	0	1	0	--	--	0.305	0.305
Seep SN-0931								
Inorganic (µg/L)								
Chromium	2	2	0	1	12	12.8	--	--
Uranium (inorganic)	1	1	0	1	1.27	1.27	--	--
Radionuclide (pCi/L)								
Strontium-90	1	0	1	0	--	--	0.0315	0.0315
Technetium-99	1	1	0	1	0.667	0.667	--	--
Tritium	1	1	0	1	11,900	11,900	--	--
Spring 82-2								
Radionuclide (pCi/L)								
Strontium-90	1	0	1	0	--	--	0.0275	0.0275
Technetium-99	1	0	1	0	--	--	0.236	0.236
Tritium	1	1	0	1	6,140	6,140	--	--
Seep SN-0936								
Inorganic (µg/L)								
Chromium	2	2	0	1	16.6	17.1	--	--
Uranium (inorganic)	1	1	0	1	1.6	1.6	--	--

Table 4-3. Summary of 100-N Area Seep Water Data for Detected Key Contaminants. (2 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Radionuclide (pCi/L)								
Strontium-90	1	0	1	0	--	--	0.0104	0.0104
Technetium-99	1	0	1	0	--	--	0.336	0.336
Tritium	1	1	0	1	10,200	10,200	--	--

-- not applicable

Table 4-4. Summary of 100-D/100-H Area Seep Water Data for Detected Key Contaminants.

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
100-D Spring (Including Springs 102-1 and 110-1)								
Inorganic (µg/L)								
Chromium	4	4	0	1	63	400	--	--
Hexavalent chromium	2	2	0	1	66.7	70.2	--	--
Nitrate	5	5	0	1	1,000	46,000	--	--
Nitrogen in nitrate	6	6	0	1	410	9,440	--	--
Radionuclide (pCi/L)								
Strontium-90	15	15	1	1	0.0776	9.41	0.0694	0.0694
Technetium-99	6	0	6	0	--	--	-0.237	0.0782
Tritium	17	13	4	0.765	266	12,500	21.3	108
Uranium-233/234	8	8	0	1	0.131	1.03	--	--
Uranium-235	8	5	3	0.625	0.0171	0.0317	-0.00109	0.00958
Uranium-238	8	8	0	1	0.123	0.858	--	--
100-H Spring (Including Springs 145-1, 150-1, 152-2, and 153-1)								
Inorganic (µg/L)								
Chromium	3	3	0	1	18	55	--	--
Nitrate	3	3	0	1	27,000	47,000	--	--
Nitrogen in nitrate	6	6	0	1	1,170	10,500	--	--
Radionuclide (pCi/L)								
Strontium-90	16	13	3	0.8125	0.0554	25.2	0.00301	0.062
Technetium-99	18	12	6	0.667	0.3	136	-0.29	0.296
Tritium	18	17	1	0.944	279	5,460	81	81
Uranium-233/234	18	18	0	1	0.176	4.99	--	--
Uranium-235	18	14	4	0.778	0.0135	0.359	-0.00334	0.0142
Uranium-238	18	18	0	1	0.138	4.04	--	--

-- not applicable

Table 4-5. Summary of 100-F/100-IU-2/100-IU-6 Area Seep Water Data for Detected Key Contaminants.

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
100-F Spring (Including Spring 207-1)								
Inorganic (µg/L)								
Chromium	3	3	0	1	6	99	--	--
Hexavalent chromium	2	2	0	1	32.2	33.7	--	--
Nitrate	3	3	0	1	20,000	33,000	--	--
Nitrogen in nitrate	4	4	0	1	2,600	11,700	--	--
Radionuclide (pCi/L)								
Strontium-90	11	4	7	0.364	0.0342	0.0986	-0.0303	0.0133
Technetium-99	1	0	1	0	--	--	-0.0303	-0.0303
Tritium	11	11	0	1	246	1,770	--	--
Uranium-233/234	11	11	0	1	0.805	4.77	--	--
Uranium-235	11	11	0	1	0.0366	0.196	--	--
Uranium-238	11	11	0	1	0.616	4.27	--	--
Spring 28-2 (Including Upriver and Downriver)								
Inorganic (µg/L)								
Chromium	1	1	0	1	2.5	2.5	--	--
Hexavalent chromium	2	2	0	1	1.17	1.36	--	--
Nitrate	4	4	0	1	5,000	40,000	--	--
Nitrogen in nitrate	12	12	0	1	1,100	8,080	--	--
Radionuclide (pCi/L)								
Strontium-90	5	0	5	0	--	--	-5.39	0.123
Technetium-99	22	22	0	1	2.04	131	--	--
Tritium	22	22	0	1	6,340	173,000	--	--
Uranium-233/234	20	20	0	1	0.507	5.06	--	--
Uranium-235	20	18	2	0.9	0.028	0.135	0.00878	0.0118
Uranium-238	20	20	0	1	0.298	3.42	--	--

-- = not applicable

Table 4-6. Summary of 300 Area Seep Water Data for Detected Key Contaminants.

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Spring 42-2								
Inorganic (µg/L)								
Chromium	2	2	0	1	4.4	6.4	--	--
Hexavalent chromium	2	2	0	1	0.6	0.9	--	--
Nitrate	3	3	0	1	6,600	23,000	--	--
Nitrogen in nitrate	11	11	0	1	3,200	6,540	--	--
Radionuclide (pCi/L)								
Strontium-90	16	13	3	0.8125	0.116	0.325	0.0136	0.149
Technetium-99	13	12	1	0.923	1.22	15.6	0.502	0.502
Tritium	24	24	0	1	1,260	11,700	--	--
Uranium-233/234	26	26	0	1	10.3	111	--	--
Uranium-235	25	25	0	1	0.471	6.25	--	--
Uranium-238	26	26	0	1	9.22	99.3	--	--

-- = not applicable

Table 4-7. Human Health Contaminants of Potential Concern in the Upland Environment. (2 Pages)

Analyte	Soil Count	Soil Detect Frequency	COPC Basis [a]
Inorganics			
Antimony	113	0.13	Analyte-specific evaluation
Arsenic	113	0.95	Analyte-specific evaluation
Barium	113	1.0	Statistical tests
Boron	113	0.87	Statistical tests
Cadmium	113	0.50	Statistical tests
Calculated total uranium	113	0.55	Analyte-specific evaluation
Chromium	113	1.0	Analyte-specific evaluation
Copper	113	1.0	Analyte-specific evaluation
Hexavalent chromium	113	0.50	Analyte-specific evaluation
Lead	113	1.00	Statistical tests
Mercury	113	0.25	Analyte-specific evaluation
Silver	113	0.08	Analyte-specific evaluation
Strontium (elemental)	113	1.0	Statistical tests
Tin	113	0.27	Statistical tests
Uranium (inorganic)	113	0.12	Analyte-specific evaluation
Organics			
Dichloroprop	93	0.44	Analyte-specific evaluation
2-Methylnaphthalene	112	0.11	Analyte-specific evaluation
Acenaphthene	112	0.21	Analyte-specific evaluation
Acenaphthylene	112	0.05	Analyte-specific evaluation
Anthracene	112	0.35	Statistical tests
Benzo[a]anthracene	112	0.70	Statistical tests
Benzo[a]pyrene	112	0.70	Statistical tests
Benzo[b]fluoranthene	112	0.75	Statistical tests
Benzo[ghi]perylene	112	0.67	Statistical tests
Benzo[k]fluoranthene	112	0.59	Statistical tests
Chrysene	112	0.71	Statistical tests
Dibenz[a,h]anthracene	112	0.41	Statistical tests
Fluoranthene	112	0.72	Statistical tests
Fluorene	112	0.21	Analyte-specific evaluation
Indeno[1,2,3-cd]pyrene	112	0.48	Statistical tests
Naphthalene	112	0.33	Statistical tests
Phenanthrene	112	0.79	Statistical tests
Pyrene	112	0.73	Statistical tests
Aroclor-1254	113	0.22	Analyte-specific evaluation
Aroclor-1260	113	0.15	Analyte-specific evaluation
Aroclor-1262	5	1.0	Analyte-specific evaluation
Dieldrin	112	0.09	Analyte-specific evaluation
Methoxychlor	112	0.16	Statistical tests

Table 4-7. Human Health Contaminants of Potential Concern in the Upland Environment. (2 Pages)

Analyte	Soil Count	Soil Detect Frequency	COPC Basis [a]
beta-1,2,3,4,5,6-Hexachlorocyclohexane	112	0.12	Analyte-specific evaluation
alpha-Chlordane	112	0.04	Analyte-specific evaluation
gamma-Chlordane	112	0.10	Analyte-specific evaluation
Dichlorodiphenyldichloroethylene	112	0.35	Statistical tests
Dichlorodiphenyltrichloroethane	112	0.17	Analyte-specific evaluation
Endosulfan I	112	0.11	Analyte-specific evaluation
Endosulfan II	112	0.02	Analyte-specific evaluation
Endosulfan sulfate	112	0.04	Analyte-specific evaluation
Radionuclides			
Cesium-137	4	1	Analyte-specific evaluation; B/C Pilot
Curium-244	4	0.25	Analyte-specific evaluation; B/C Pilot
Europium-152	4	0.5	Analyte-specific evaluation; B/C Pilot
Europium-154	4	0.25	Analyte-specific evaluation; B/C Pilot
Plutonium-239/240	4	1	Analyte-specific evaluation; B/C Pilot
Strontium-90	4	0.75	Analyte-specific evaluation; B/C Pilot
Uranium-233/234	113	0.58	Analyte-specific evaluation
Uranium-238	113	0.55	Analyte-specific evaluation

[a] COPC selection is described in RCBRA Volume I, Section 4.3.
COPC = contaminant of potential concern
RCBRA = River Corridor Baseline Risk Assessment

Table 4-8. Human Health Contaminants of Potential Concern in the Riparian Environment. (2 Pages)

Analyte	Soil Count	Soil Detect Frequency	COPC Basis [a]
Inorganics			
Arsenic	98	1.0	Analyte-specific evaluation
Barium	36	1.0	Analyte-specific evaluation
Cadmium	98	1.0	Analyte-specific evaluation
Calculated total uranium	98	0.94	Analyte-specific evaluation
Chromium	98	1.0	Statistical tests
Copper	36	0.89	Analyte-specific evaluation
Hexavalent chromium	96	0.25	Analyte-specific evaluation
Lead	98	1.0	Analyte-specific evaluation
Mercury	98	0.94	Analyte-specific evaluation
Uranium (inorganic)	98	0.28	Analyte-specific evaluation
Zinc	98	1.0	Statistical tests

Table 4-8. Human Health Contaminants of Potential Concern in the Riparian Environment. (2 Pages)

Analyte	Soil Count	Soil Detect Frequency	COPC Basis [a]
Organics			
Fluoranthene	98	0.051	Analyte-specific evaluation
Pyrene	98	0.15	Analyte-specific evaluation
Aroclor-1260	98	0.082	Analyte-specific evaluation
Aldrin	98	0.041	Analyte-specific evaluation
Dieldrin	98	0.031	Analyte-specific evaluation
Endosulfan sulfate	98	0.041	Analyte-specific evaluation
Endrin aldehyde	98	0.041	Analyte-specific evaluation
Bis[2-ethylhexyl] phthalate	98	0.98	Analyte-specific evaluation
Phenol	98	0.45	Analyte-specific evaluation
Total PCBs (congeners)	16	1.0	Analyte-specific evaluation; 100-NR-2
Radionuclides			
Carbon-14	10	0.33	Analyte-specific evaluation
Cesium-137	98	0.77	Analyte-specific evaluation
Europium-152	98	0.16	Analyte-specific evaluation
Strontium-90	16	0.69	Analyte-specific evaluation; B/C Pilot
Technetium-99	20	0.50	Analyte-specific evaluation
Uranium-233/234	98	0.99	Analyte-specific evaluation
Uranium-238	98	0.94	Analyte-specific evaluation

[a] COPC selection process is described in RCBRA Volume I, Section 5.3.
COPC = contaminant of potential concern
RCBRA = River Corridor Baseline Risk Assessment

Table 4-9. Human Health Contaminants of Potential Concern in the Near-Shore Environment. (2 Pages)

Analyte	COPC Basis [a]
Sediment and Surface Water	
Inorganics	
Cadmium	Based on sediment
Calculated total uranium	Based on sediment
Chromium	Based on sediment
Hexavalent chromium	Based on sediment
Fluoride	Based on sediment
Lead	Based on sediment
Mercury	Based on sediment
Nitrogen in nitrate	Based on sediment
Nitrogen in nitrite	Based on sediment
Titanium	Based on sediment

Table 4-9. Human Health Contaminants of Potential Concern in the Near-Shore Environment. (2 Pages)

Analyte	COPC Basis [a]
Radionuclides	
Carbon-14	Based on sediment
Cesium-137	Based on sediment
Plutonium-239/240	Based on sediment
Strontium-90	Based on sediment
Technetium-99	Based on sediment
Uranium-233/234	Based on sediment
Uranium-235	Based on sediment
Uranium-238	Based on sediment
Biotic Media	
Inorganics	
Aluminum	Based on clam data
Barium	Based on clam data
Copper	Based on clam data
Manganese	Based on clam data
Nickel	Based on sculpin data
Phosphorus	Based on clam data
Selenium	Based on sculpin data
Strontium (elemental)	Based on sculpin data
Vanadium	Based on clam data
Zinc	Based on macroinvertebrate (crayfish) data
Radionuclide	
Carbon-14	Based on clam and sculpin data

[a] COPC selection process is described in RCBRA Volume I, Section 6.3.

COPC = contaminant of potential concern
RCBRA = River Corridor Baseline Risk Assessment

Table 4-10. Background and Reference Area Concentrations of Upland and Riparian Soil Contaminants of Potential Concern. (3 Pages)

Upland or Riparian Soil COPC	Hanford Area 90th Percentile [a]	Yakima Basin 90th Percentile [b]	Reference Area Upland Soil CTE	Reference Area Upland Soil RME	Reference Area Riparian Soil CTE	Reference Area Riparian Soil RME
Inorganics (mg/kg)						
Aluminum	11,800	33,379	7,600	9,100	8,900	9,900
Antimony	--	--	0.3	0.3	0.69	0.69
Arsenic	6.47	5.13	2.8	3.2	6	7.4
Barium	132	--	88	100	91	110
Beryllium	1.51	1.57	0.53	0.6	0.33	0.37
Boron	--	--	1.6	1.9	1.2	1.6
Cadmium	--	0.93	0.14	0.18	0.94	1.4
Chromium	18.5	38.27	9.9	12	22	25
Copper	22	26.47	15	17	28	34
Fluoride	2.81	--	0.52	0.66	0.54	0.94
Hexavalent chromium	--	--	0.29	0.33	0.26	0.27
Lead	10.2	11	5.9	6.9	31	47
Mercury	0.33	0.05	0.022	0.022	0.056	0.067
Nitrogen in nitrate	12	--	0.85	1.1	7	13
Nitrogen in nitrite	--	--	0.16	0.25	0.41	0.85
Selenium	--	--	NA	NA	0.97	0.97
Silver	0.73	--	NA	NA	0.12	0.12
Strontium (elemental)	--	--	24	26	30	33
Tin	--	--	1.4	1.4	2.4	4.1
Uranium (inorganic)	--	--	0.76	0.92	2.2	2.5
Zinc	67.8	78.71	47	50	190	250
Organics (mg/kg)						
2-Methylnaphthalene	--	--	NA	NA	NA	NA
Acenaphthene	--	--	NA	NA	NA	NA
Acenaphthylene	--	--	NA	NA	NA	NA
Aldrin	--	--	NA	NA	9.00E-04	9.00E-04
alpha-Chlordane	--	--	NA	NA	NA	NA
Anthracene	--	--	0.0032	0.0037	NA	NA
Aroclor-1254	--	--	NA	NA	0.018	0.018
Aroclor-1260	--	--	NA	NA	NA	NA
Aroclor-1262	--	--	--	--	--	--
Benzo[a]anthracene	--	--	0.0024	0.0037	NA	NA

Table 4-10. Background and Reference Area Concentrations of Upland and Riparian Soil Contaminants of Potential Concern. (3 Pages)

Upland or Riparian Soil COPC	Hanford Area 90th Percentile [a]	Yakima Basin 90th Percentile [b]	Reference Area Upland Soil CTE	Reference Area Upland Soil RME	Reference Area Riparian Soil CTE	Reference Area Riparian Soil RME
Benzo[a]pyrene	--	--	0.0019	0.0027	NA	NA
Benzo[b]fluoranthene	--	--	0.0022	0.0032	NA	NA
Benzo[ghi]perylene	--	--	0.0026	0.0033	NA	NA
Benzo[k]fluoranthene	--	--	0.002	0.003	NA	NA
beta-1,2,3,4,5,6-Hexachlorocyclohexane	--	--	NA	NA	6.00E-04	6.00E-04
Bis[2-ethylhexyl] phthalate	--	--	0.046	0.07	0.048	0.063
Chrysene	--	--	0.0022	0.0031	NA	NA
Dibenz[a,h]anthracene	--	--	NA	NA	NA	NA
Dichlorodiphenyldichloro-ethylene	--	--	0.00049	0.00049	0.0014	0.0022
Dichlorodiphenyltrichloroethane	--	--	NA	NA	0.0011	0.0015
Dichloroprop	--	--	0.038	0.08	--	--
Dieldrin	--	--	NA	NA	NA	NA
Endosulfan I	--	--	NA	NA	0.0013	0.002
Endosulfan II	--	--	NA	NA	NA	NA
Endosulfan sulfate	--	--	NA	NA	0.00043	0.00043
Endrin aldehyde	--	--	0.0016	0.0016	0.00088	0.0015
Fluoranthene	--	--	0.0074	0.0074	NA	NA
Fluorene	--	--	0.0042	0.0093	NA	NA
gamma-Chlordane	--	--	NA	NA	0.00086	0.0019
Indeno[1,2,3-cd]pyrene	--	--	0.0039	0.0039	NA	NA
Methoxychlor	--	--	0.0016	0.0016	0.0077	0.012
Naphthalene	--	--	0.019	0.022	NA	NA
Phenanthrene	--	--	0.0041	0.015	NA	NA
Phenol	--	--	0.018	0.018	0.045	0.077
Pyrene	--	--	0.0026	0.0044	NA	NA
Radionuclides (pCi/g)						
Carbon-14	--	--	--	--	--	--
Cesium-137	1.05	--	0.11	0.14	0.16	0.18
Curium-244	--	--	--	--	--	--
Europium-152	--	--	NA	NA	NA	NA
Europium-154	--	--	NA	NA	NA	NA

Table 4-10. Background and Reference Area Concentrations of Upland and Riparian Soil Contaminants of Potential Concern. (3 Pages)

Upland or Riparian Soil COPC	Hanford Area 90th Percentile [a]	Yakima Basin 90th Percentile [b]	Reference Area Upland Soil CTE	Reference Area Upland Soil RME	Reference Area Riparian Soil CTE	Reference Area Riparian Soil RME
Plutonium-239/240	0.0248	--	0.047	0.047	NA	NA
Strontium-90	0.178	--	0.073	0.073	NA	NA
Technetium-99	--	--	--	--	--	--
Uranium-233/234	1.1	--	0.17	0.21	0.89	1.1
Uranium-235	0.109	--	NA	NA	0.068	0.068
Uranium-238	1.06	--	0.18	0.2	0.72	0.84

[a] Inorganic values from Summary 2 of *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes* (DOE/RL-92-24), October 1995. Radionuclide values from 5-1 of *Hanford Site Background: Part 2, Soil Background for Radionuclides* (DOE/RL-96-12).

[b] Values from 17 of *Natural Background Soil Metals Concentrations in Washington State* (Ecology 1994).

-- = not applicable. Not analyzed for this data set.
COPC = contaminant of potential concern
CTE = central tendency exposure
NA = not available. Not detected in any sample, or too few detects to estimate a value.
RME = reasonable maximum exposure

DOE/RL-92-24, 1995, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Rev. 3, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/RL-96-12, 1996, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, 1994, *Natural Background Soil Metals Concentrations in Washington State*, Ecology Publication #94-115, Washington State Department of Ecology, Olympia, Washington.

Table 4-11. Cancer Risks Related to Reference Area Concentrations of Upland, Riparian, and Near-Shore Contaminants of Potential Concern. (4 Pages)

COPC	Avid Angler [a]	Avid Hunter [b]	Casual User [c]	Nonresident Tribal [d]
Reasonable Maximum Exposure				
Aluminum	c	c	c	c
Antimony	c	c	c	c
Arsenic	2.E-06	9.E-06	8.E-07	1.E-02
Barium	c	c	c	c
Beryllium	5.E-11	4.E-11	2.E-11	4.E-10
Boron	c	c	c	c
Cadmium	1.E-10	9.E-12	5.E-11	8.E-10
Chromium	c	c	c	c
Copper	c	c	c	c
Fluoride	c	c	c	c
Hexavalent chromium	2.E-10	1.E-10	7.E-11	2.E-09
Lead	c	c	c	c
Mercury	c	c	c	c
Nitrogen in nitrate	c	c	c	c
Nitrogen in nitrite	c	c	c	c
Selenium	c	f	c	c
Silver	f	f	c	c
Strontium (elemental)	c	c	c	c
Tin	c	c	c	c
Uranium (inorganic)	c	c	c	c
Zinc	c	c	c	c
2-Methylnaphthalene	f	f	f	f
Acenaphthene	f	f	f	f
Acenaphthylene	f	f	f	f
Aldrin	2.E-09	f	1.E-09	5.E-07
alpha-Chlordane	f	f	f	f
Anthracene	f	f	f	c
Aroclor-1254	6.E-13	f	4.E-09	g
Aroclor-1260	f	f	f	f
Aroclor-1262	--	--	--	--
Benzo[a]anthracene	f	8.E-08	f	5.E-07
Benzo[a]pyrene	f	5.E-07	f	3.E-06
Benzo[b]fluoranthene	f	6.E-08	f	3.E-07
Benzo[ghi]perylene	f	c	f	c
Benzo[k]fluoranthene	f	5.E-08	f	3.E-07
beta-1,2,3,4,5,6-Hexachlorocyclohexane	2.E-14	f	8.E-11	g
Bis[2-ethylhexyl] phthalate	2.E-08	2.E-08	8.E-11	5.E-08
Chrysene	f	7.E-09	f	4.E-08
Dibenz[a,h]anthracene	f	f	f	f
Dichlorodiphenyldichloroethylene	8.E-11	2.E-09	5.E-11	1.E-08
Dichlorodiphenyltrichloroethane	8.E-15	f	4.E-11	g
Dichloroprop	--	c	--	c
Dieldrin	f	f	f	f
Endosulfan I	c	f	f	c

Table 4-11. Cancer Risks Related to Reference Area Concentrations of Upland, Riparian, and Near-Shore Contaminants of Potential Concern. (4 Pages)

COPC	Avid Angler [a]	Avid Hunter [b]	Casual User [c]	Nonresident Tribal [d]
Endosulfan II	f	f	c	c
Endosulfan sulfate	f	f	c	c
Endrin aldehyde	f	c	c	c
Fluoranthene	f	c	f	c
Fluorene	f	c	f	c
gamma-Chlordane	1.E-14	f	5.E-11	g
Indeno[1,2,3-cd]pyrene	f	5.E-08	f	3.E-07
Methoxychlor	f	c	c	c
Naphthalene	f	c	f	c
Phenanthrene	f	c	f	c
Phenol	f	c	c	c
Pyrene	f	c	f	c
Carbon-14	f	--	--	f
Cesium-137	2.E-06	6.E-07	3.E-07	2.E-05
Curium-244	--	--	--	--
Europium-152	5.E-06	f	f	g
Europium-154	f	f	f	f
Plutonium-239/240	f	1.E-09	f	1.E-07
Strontium-90	3.E-09	8.E-07	f	3.E-05
Technetium-99	f	--	--	f
Uranium-233/234	3.E-08	9.E-09	8.E-09	5.E-06
Uranium-235	5.E-08	f	2.E-08	1.E-07
Uranium-238	2.E-07	3.E-08	7.E-08	7.E-06
Central Tendency Exposure				
Aluminum	c	c	c	--
Antimony	c	c	c	--
Arsenic	2.E-07	1.E-06	4.E-08	--
Barium	c	c	c	--
Beryllium	4.E-12	3.E-12	8.E-13	--
Boron	c	c	c	--
Cadmium	9.E-12	7.E-13	2.E-12	--
Chromium	c	c	c	--
Copper	c	c	c	--
Fluoride	c	c	c	--
Hexavalent chromium	2.E-11	1.E-11	3.E-12	--
Lead	c	c	c	--
Mercury	c	c	c	--
Nitrogen in nitrate	c	c	c	--
Nitrogen in nitrite	c	c	c	--
Selenium	c	f	c	--
Silver	f	f	c	--
Strontium (elemental)	c	c	c	--
Tin	c	c	c	--

Table 4-11. Cancer Risks Related to Reference Area Concentrations of Upland, Riparian, and Near-Shore Contaminants of Potential Concern. (4 Pages)

COPC	Avid Angler [a]	Avid Hunter [b]	Casual User [c]	Nonresident Tribal [d]
Uranium (inorganic)	c	c	c	--
Zinc	c	c	c	--
2-Methylnaphthalene	f	f	f	--
Acenaphthene	f	f	f	--
Acenaphthylene	f	f	f	--
Aldrin	3.E-10	f	8.E-11	--
alpha-Chlordane	f	f	f	--
Anthracene	f	c	f	--
Aroclor-1254	5.E-14	f	2.E-10	--
Aroclor-1260	f	f	f	--
Aroclor-1262	--	--	--	--
Benzo[a]anthracene	f	8.E-09	f	--
Benzo[a]pyrene	f	5.E-08	f	--
Benzo[b]fluoranthene	f	6.E-09	f	--
Benzo[ghi]perylene	f	c	f	--
Benzo[k]fluoranthene	f	5.E-09	f	--
beta-1,2,3,4,5,6-Hexachlorocyclohexane	2.E-15	f	5.E-12	--
Bis[2-ethylhexyl] phthalate	2.E-10	2.E-09	4.E-12	--
Chrysene	f	7.E-10	f	--
Dibenz[a,h]anthracene	f	f	f	--
Dichlorodiphenyldichloroethylene	1.E-11	3.E-10	2.E-12	--
Dichlorodiphenyltrichloroethane	5.E-16	f	2.E-12	--
Dichloroprop	--	c	--	--
Dieldrin	f	f	f	--
Endosulfan I	f	f	f	--
Endosulfan II	f	f	f	--
Endosulfan sulfate	f	f	c	--
Endrin aldehyde	f	c	c	--
Fluoranthene	f	c	f	--
Fluorene	f	c	f	--
gamma-Chlordane	4.E-16	f	1.E-12	--
Indeno[1,2,3-cd]pyrene	f	8.E-09	f	--
Methoxychlor	f	c	c	--
Naphthalene	f	c	f	--
Phenanthrene	f	c	f	--
Phenol	f	c	c	--
Pyrene	f	c	f	--
Carbon-14	f	--	--	--
Cesium-137	2.E-07	6.E-08	1.E-08	--

Table 4-11. Cancer Risks Related to Reference Area Concentrations of Upland, Riparian, and Near-Shore Contaminants of Potential Concern. (4 Pages)

COPC	Avid Angler [a]	Avid Hunter [b]	Casual User [c]	Nonresident Tribal [d]
Curium-244	--	--	--	--
Europium-152	5.E-07	[f]	[f]	--
Europium-154	[f]	[f]	[f]	--
Plutonium-239/240	[f]	1.E-10	[f]	--
Strontium-90	5.E-11	1.E-07	[f]	--
Technetium-99	[f]	--	--	--
Uranium-233/234	2.E-09	1.E-09	3.E-10	--
Uranium-235	4.E-09	[f]	1.E-09	--
Uranium-238	2.E-08	3.E-09	3.E-09	--

[a] Reference area risks are calculated for upland soil, riparian soil, and near-shore sediment and water COPCs using reference area sediment and surface water concentrations in the near-shore environment, and riparian dust concentrations in air.
[b] Reference area risks are calculated for upland soil, riparian soil, and near-shore sediment and water COPCs using reference area soil concentrations in the upland environment.
[c] Reference area risks are calculated for upland soil, riparian soil, and near-shore sediment and water COPCs using reference area soil concentrations in the riparian environment.
[d] Exposure time is allocated among upland, riparian, and near-shore environments as described in Section 3.3. For comparability to results in Section 4.4, reference area concentrations used in these calculations are limited to the COPC-environment combinations shown in Tables 4-7, 4-8, and 4-9 (sediment and surface water).
[e] No carcinogenic toxicity criteria are published. Evaluated for noncarcinogenic effects.
[f] Not detected in any reference area sample in this environment.
[g] This analyte was not detected in any of the three COPC-environment combinations shown in Tables 4-7, 4-8, and 4-9. Reference area cancer risk values for other scenarios reflect detections in an environment where this analyte was not identified as a COPC.
-- = not applicable. Not analyzed for this data set.
COPC = contaminant of potential concern

Table 4-12. Radiation Dose Related to Reference Area Concentrations of Upland, Riparian, and Near-Shore Contaminants of Potential Concern. (2 Pages)

COPC	Avid Angler [a]	Avid Hunter [b]	Casual User [c]	Nonresident Tribal [d]
Reasonable Maximum Exposure (mrem/yr)				
Carbon-14	[c]	--	--	[c]
Cesium-137	0.11	0.024	0.013	0.32
Curium-244	--	--	--	--
Europium-152	0.23	[c]	[c]	[f]
Europium-154	[c]	[c]	[c]	[c]
Plutonium-239/240	[c]	0.00020	[c]	0.0088
Strontium-90	0.00028	0.064	[c]	0.80
Technetium-99	[c]	--	[c]	[c]
Uranium-233/234	0.0025	0.00084	0.00061	0.17
Uranium-235	0.0021	[c]	0.0011	0.0025
Uranium-238	0.011	0.0016	0.0031	0.17

Table 4-12. Radiation Dose Related to Reference Area Concentrations of Upland, Riparian, and Near-Shore Contaminants of Potential Concern. (2 Pages)

COPC	Avid Angler [a]	Avid Hunter [b]	Casual User [c]	Nonresident Tribal [d]
Central Tendency Exposure (mrem/yr)				
Carbon-14	[c]	--	--	--
Cesium-137	0.033	0.0079	0.0019	--
Curium-244	--	--	--	--
Europium-152	0.072	[c]	[c]	--
Europium-154	[c]	[c]	[c]	--
Plutonium-239/240	[c]	0.000051	[c]	--
Strontium-90	0.000018	0.033	[c]	--
Technetium-99	[c]	--	[c]	--
Uranium-233/234	0.00030	0.00030	0.000044	--
Uranium-235	0.00066	[c]	0.00018	--
Uranium-238	0.0028	0.00056	0.00041	--

[a] Reference area risks are calculated for upland soil, riparian soil, and near-shore sediment and water COPCs using reference area sediment and surface water concentrations in the near-shore environment, and riparian dust concentrations in air.
[b] Reference area risks are calculated for upland soil, riparian soil, and near-shore sediment and water COPCs using reference area soil concentrations in the upland environment.
[c] Reference area risks are calculated for upland soil, riparian soil, and near-shore sediment and water COPCs using reference area soil concentrations in the riparian environment.
[d] Exposure time is allocated among upland, riparian, and near-shore environments as described in Section 3.3. For comparability to results in Section 4.4, reference area concentrations used in these calculations are limited to the COPC-environment combinations shown in Tables 4-7, 4-8, and 4-9 (sediment and surface water).
[e] Not detected in any reference area sample in this environment.
[f] This analyte was not detected in any of the three COPC-environment combinations shown in Tables 4-7, 4-8, and 4-9. Reference area dose values for other scenarios reflect detections in an environment where this analyte was not identified as a COPC.

-- = not applicable. Not analyzed for this data set.
COPC = contaminant of potential concern

Table 4-13. Hazard Indexes Related to Reference Area Concentrations of Upland, Riparian, and Near-Shore Contaminants of Potential Concern. (4 Pages)

COPC	Avid Angler [a]	Avid Hunter [b]	Casual User [c]	Nonresident Tribal [d]
Reasonable Maximum Exposure				
Aluminum	4.9E-03	5.2E-03	4.8E-03	6.4E-01
Antimony	5.2E-04	1.1E-03	8.1E-04	1.2E-01
Arsenic	2.6E-02	4.7E-02	1.4E-02	4.4E+01
Barium	5.1E-04	2.9E-04	2.6E-04	8.6E-02
Beryllium	2.2E-04	4.3E-04	8.8E-05	2.2E-02
Boron	8.8E-05	3.5E-04	3.9E-06	4.6E-02
Cadmium	1.7E-03	8.5E-04	8.4E-04	7.4E+00
Chromium	8.3E-06	8.0E-05	7.8E-06	5.4E-04

Table 4-13. Hazard Indexes Related to Reference Area Concentrations of Upland, Riparian, and Near-Shore Contaminants of Potential Concern. (4 Pages)

COPC	Avid Angler [a]	Avid Hunter [b]	Casual User [c]	Nonresident Tribal [d]
Copper	4.4E-04	4.1E-02	4.0E-04	2.7E+00
Fluoride	1.8E-03	3.5E-04	7.5E-06	6.6E-02
Hexavalent chromium	3.5E-07	1.1E-03	4.3E-05	6.5E-03
Lead	[e]	[e]	[e]	[e]
Mercury	1.6E-04	8.5E-02	1.1E-04	2.1E+00
Nitrogen in nitrate	9.7E-05	2.0E-07	3.9E-06	3.4E-03
Nitrogen in nitrite	1.7E-06	7.7E-07	4.1E-06	4.5E-06
Selenium	5.6E-05	[f]	9.2E-05	[g]
Silver	[f]	[f]	1.1E-05	[g]
Strontium (elemental)	2.2E-04	7.9E-03	2.6E-05	2.3E-01
Tin	1.4E-06	2.7E-04	3.2E-06	1.3E-03
Uranium (inorganic)	4.5E-03	1.3E-03	2.0E-03	3.1E-01
Zinc	7.5E-04	1.0E-01	3.9E-04	6.5E+00
2-Methylnaphthalene	[f]	[f]	[f]	[f]
Acenaphthene	[f]	[f]	[f]	[f]
Acenaphthylene	[f]	[f]	[f]	[f]
Aldrin	2.0E-05	[f]	2.3E-05	1.8E-03
alpha-Chlordane	[f]	[f]	[f]	[f]
Anthracene	[f]	6.5E-07	[f]	5.6E-06
Aroclor-1254	[f]	[f]	7.8E-04	[g]
Aroclor-1260	[f]	[f]	[f]	[f]
Aroclor-1262	--	--	--	--
Benzo[a]anthracene	[f]	[h]	[f]	[h]
Benzo[a]pyrene	[f]	[h]	[f]	[h]
Benzo[b]fluoranthene	[f]	[h]	[f]	[h]
Benzo[ghi]perylene	[f]	1.8E-06	[f]	9.8E-06
Benzo[k]fluoranthene	[f]	[h]	[f]	[h]
beta-1,2,3,4,5,6-Hexachlorocyclohexane	[f]	[f]	1.2E-06	[g]
Bis[2-ethylhexyl] phthalate	2.1E-04	1.3E-04	2.4E-06	3.2E-04
Chrysene	[f]	[h]	[f]	[h]
Dibenz[a,h]anthracene	[f]	[f]	[f]	[f]
Dichlorodiphenyldichloroethylene	[h]	[h]	[h]	[h]
Dichlorodiphenyltrichloroethane	[f]	[f]	1.7E-06	[g]
Dichloroprop	--	8.4E-04	--	1.3E-02
Dieldrin	[f]	[f]	[f]	[f]
Endosulfan I	4.4E-07	[f]	2.5E-07	[g]
Endosulfan II	[f]	[f]	[f]	[f]
Endosulfan sulfate	[f]	[f]	5.4E-08	4.6E-05
Endrin aldehyde	[f]	2.4E-04	3.8E-06	7.5E-04
Fluoranthene	[f]	7.5E-06	[f]	5.4E-05
Fluorene	[f]	1.4E-05	[f]	1.4E-04
gamma-Chlordane	3.5E-10	[f]	2.2E-06	[g]
Indeno[1,2,3-cd]pyrene	[f]	[h]	[f]	[h]
Methoxychlor	[f]	1.4E-05	1.8E-06	1.1E-04

Table 4-13. Hazard Indexes Related to Reference Area Concentrations of Upland, Riparian, and Near-Shore Contaminants of Potential Concern. (4 Pages)

COPC	Avid Angler [a]	Avid Hunter [b]	Casual User [c]	Nonresident Tribal [d]
Naphthalene	[f]	9.5E-05	[f]	1.6E-03
Phenanthrene	[f]	2.6E-05	[f]	2.2E-04
Phenol	4.9E-11	4.6E-06	1.9E-07	3.1E-03
Pyrene	[f]	6.2E-06	[f]	4.7E-05
Central Tendency Exposure				
Aluminum	7.9E-04	1.4E-03	3.7E-04	--
Antimony	3.3E-05	5.0E-04	6.8E-05	--
Arsenic	5.2E-03	2.0E-02	9.0E-04	--
Barium	6.5E-05	7.8E-05	1.9E-05	--
Beryllium	3.5E-05	1.7E-04	6.7E-06	--
Boron	5.2E-06	1.5E-04	2.4E-07	--
Cadmium	3.7E-04	3.2E-04	4.4E-05	--
Chromium	1.3E-06	3.5E-05	5.8E-07	--
Copper	6.1E-05	1.9E-02	2.7E-05	--
Fluoride	1.1E-04	1.4E-04	3.6E-07	--
Hexavalent chromium	1.0E-07	5.2E-04	3.4E-06	--
Lead	[c]	[c]	[c]	--
Mercury	2.5E-05	4.4E-02	7.3E-06	--
Nitrogen in nitrate	5.8E-06	2.7E-08	1.7E-07	--
Nitrogen in nitrite	2.7E-07	8.0E-08	1.6E-07	--
Selenium	3.5E-06	[f]	7.7E-06	--
Silver	[f]	[f]	9.5E-07	--
Strontium (elemental)	1.6E-05	3.7E-03	1.9E-06	--
Tin	2.2E-07	1.4E-04	1.6E-07	--
Uranium (inorganic)	5.6E-04	4.1E-04	1.4E-04	--
Zinc	1.1E-04	4.9E-02	2.5E-05	--
2-Methylnaphthalene	[f]	[f]	[f]	--
Acenaphthene	[f]	[f]	[f]	--
Acenaphthylene	[f]	[f]	[f]	--
Aldrin	5.6E-06	[f]	1.7E-06	--
alpha-Chlordane	[f]	[f]	[f]	--
Anthracene	[f]	2.9E-07	[f]	--
Aroclor-1254	[f]	[f]	5.9E-05	--
Aroclor-1260	[f]	[f]	[f]	--
Aroclor-1262	--	--	--	--
Benzo[a]anthracene	[f]	[h]	[f]	--
Benzo[a]pyrene	[f]	[h]	[f]	--
Benzo[b]fluoranthene	[f]	[h]	[f]	--
Benzo[ghi]perylene	[f]	6.9E-07	[f]	--

Table 4-13. Hazard Indexes Related to Reference Area Concentrations of Upland, Riparian, and Near-Shore Contaminants of Potential Concern. (4 Pages)

COPC	Avid Angler [a]	Avid Hunter [b]	Casual User [c]	Nonresident Tribal [d]
Benzo[k]fluoranthene	[f]	[h]	[f]	--
beta-1,2,3,4,5,6-Hexachlorocyclohexane	[f]	[h]	9.4E-08	--
Bis[2-ethylhexyl] phthalate	8.1E-06	4.6E-05	1.4E-07	--
Chrysene	[f]	[h]	[f]	--
Dibenz[a,h]anthracene	[f]	[f]	[f]	--
Dichlorodiphenyldichloroethylene	[h]	[h]	[h]	--
Dichlorodiphenyltrichloroethane	[f]	[f]	9.9E-08	--
Dichloroprop	--	2.1E-04	--	--
Dieldrin	[f]	[f]	[f]	--
Endosulfan I	1.2E-07	[f]	1.3E-08	--
Endosulfan II	[f]	[f]	[f]	--
Endosulfan sulfate	[f]	[f]	4.2E-09	--
Endrin aldehyde	[f]	1.2E-04	1.7E-07	--
Fluoranthene	[f]	3.8E-06	[f]	--
Fluorene	[f]	3.3E-06	[f]	--
gamma-Chlordane	4.9E-11	[f]	8.1E-08	--
Indeno[1,2,3-cd]pyrene	[f]	[h]	[f]	--
Methoxychlor	[f]	7.4E-06	8.9E-08	--
Naphthalene	[f]	4.1E-05	[f]	--
Phenanthrene	[f]	3.7E-06	[f]	--
Phenol	9.0E-12	2.4E-06	8.8E-09	--
Pyrene	[f]	1.9E-06	[f]	--

[a] Reference area risks are calculated for upland soil, riparian soil, and near-shore sediment and water COPCs using reference area sediment and surface water concentrations in the near-shore environment, and riparian dust concentrations in air.
[b] Reference area risks are calculated for upland soil, riparian soil, and near-shore sediment and water COPCs using reference area soil concentrations in the upland environment.
[c] Reference area risks are calculated for upland soil, riparian soil, and near-shore sediment and water COPCs using reference area soil concentrations in the riparian environment.
[d] Exposure time is allocated among upland, riparian, and near-shore environments as described in Section 3.3. For comparability to results in Section 4.4, reference area concentrations used in these calculations are limited to the COPC-environment combinations shown in Tables 4-7, 4-8, and 4-9 (sediment and surface water).
[e] Lead soil concentrations are evaluated relative to EPA benchmarks based on neurobehavioral effects in Section 4.3.4.
[f] Not detected in any reference area sample in this environment.
[g] This analyte was not detected in any of the three COPC-environment combinations shown in Tables 4-7, 4-8, and 4-9. Reference area hazard index values for other scenarios reflect detections in an environment where this analyte was not identified as a COPC.
[h] No noncarcinogenic toxicity criteria are published. Evaluated for carcinogenic effects.
-- = not applicable. Not analyzed for this data set.
COPC = contaminant of potential concern
EPA = U.S. Environmental Protection Agency

Table 4-14. Total Site Cancer Risk for the Casual User Scenario in the Riparian Environment.

ROD Area	RME Cancer Risk			CTE Cancer Risk		
	Present Day	2075	2150	Present Day	2075	2150
100-B/C	3E-06	1E-06	1E-06	9E-08	5E-08	4E-08
100-K	2E-06	1E-06	9E-07	9E-08	6E-08	5E-08
100-N	2E-06	9E-07	8E-07	7E-08	4E-08	4E-08
100-D/100-H	3E-06	1E-06	9E-07	1E-07	5E-08	4E-08
100-F/100-IU2/ 100-IU-6	8E-06	2E-06	1E-06	2E-07	6E-08	5E-08
300 Area	3E-06	1E-06	1E-06	1E-07	7E-08	7E-08

CTE = central tendency exposure
RME = reasonable maximum exposure
ROD = record of decision

Table 4-15. Total Site Radiation Dose for the Casual User Scenario in the Riparian Environment.

ROD Area	RME Radiation Dose (mrem/yr)			CTE Radiation Dose (mrem/yr)		
	Present Day	2075	2150	Present Day	2075	2150
100-B/C	0.098	0.021	0.0049	0.0075	0.0017	0.00048
100-K	0.042	0.011	0.0048	0.0068	0.0018	0.00073
100-N	0.036	0.0099	0.0044	0.0059	0.0016	0.00066
100-D/100-H	0.076	0.0088	0.0036	0.011	0.0011	0.00044
100-F/100-IU2/ 100-IU-6	0.33	0.049	0.013	0.031	0.0028	0.00071
300 Area	0.074	0.012	0.0068	0.012	0.0019	0.001

CTE = central tendency exposure
RME = reasonable maximum exposure
ROD = record of decision

Table 4-16. Hazard Indices for the Casual User Scenario in the Riparian Environment. (2 Pages)

ROD Area	RME Hazard Index [a]	CTE Hazard Index [a]
	Present Day	Present Day
100-B/C	0.019	0.0012
100-K	0.019	0.0016
100-N	0.017	0.0010

Table 4-16. Hazard Indices for the Casual User Scenario in the Riparian Environment. (2 Pages)

ROD Area	RME Hazard Index [a]	CTE Hazard Index [a]
	Present Day	Present Day
100-D/100-H	0.020	0.0012
100-F/100-IU2/ 100-IU-6	0.024	0.0013
300 Area	0.024	0.0019

[a] Hazard index results are for the child receptor.
CTE = central tendency exposure
RME = reasonable maximum exposure
ROD = record of decision

Table 4-17. Present-Day Total Cancer Risk for the Avid Angler Scenario in the Near-Shore Environment. (2 Pages)

Exposure Media	RME Cancer Risk	CTE Cancer Risk
100-B/C ROD Area		
Sediment, river water, dust	1E-06	5E-08
Sculpin [a]	[b]	[b]
100-K ROD Area		
Sediment, river water, dust	2E-06	1E-07
Sculpin [a]	4E-05	2E-06
100-N ROD Area		
Sediment, river water, dust	3E-06	9E-08
Sculpin [a]	[c]	[c]
100-D/100-H ROD Area		
Sediment, river water, dust	2E-06	1E-07
Sculpin [a]	[b]	[b]
100-F/100-IU-2/100-IU-6 ROD Area		
Sediment, river water, dust	6E-07	3E-08
Sculpin [a]	[b]	[b]
300 ROD Area		
Sediment, river water, dust	2E-06	1E-07

Table 4-17. Present-Day Total Cancer Risk for the Avid Angler Scenario in the Near-Shore Environment. (2 Pages)

Exposure Media	RME Cancer Risk	CTE Cancer Risk
Sculpin [a]	[b]	[b]

[a] Screening-level result employing near-shore COPC concentrations in sculpin, a small fish with a limited home range collected in each ROD area. See Section 4.6.
[b] Not available. Carbon-14, the only carcinogenic COPC in near-shore biota (see Section 4.9), was not analyzed in samples from this ROD area.
[c] Not detected. Carbon-14, the only carcinogenic COPC in near-shore biota (see Section 4.9), was analyzed but not detected in samples from this ROD area.

COPC = contaminant of potential concern RME = reasonable maximum exposure
CTE = central tendency exposure ROD = record of decision

Table 4-18. Present-Day Total Radiation Dose for the Avid Angler Scenario in the Near-Shore Environment.

Exposure Media	RME Radiation Dose (mrem/yr)	CTE Radiation Dose (mrem/yr)
100-B/C ROD Area		
Sediment, river water, dust	0.048	0.0075
Sculpin [a]	[b]	[b]
100-K ROD Area		
Sediment, river water, dust	0.11	0.015
Sculpin [a]	1.6	0.24
100-N ROD Area		
Sediment, river water, dust	0.017	0.013
Sculpin [a]	[c]	[c]
100-D/100-H ROD Area		
Sediment, river water, dust	0.076	0.014
Sculpin [a]	[b]	[b]
100-F/100-IU-2/100-IU-6 ROD Area		
Sediment, river water, dust	0.028	0.0051
Sculpin [a]	[b]	[b]
300 ROD Area		
Sediment, river water, dust	0.088	0.016
Sculpin [a]	[b]	[b]

[a] Screening-level result employing near-shore COPC concentrations in sculpin, a small fish with a limited home range collected in each ROD area. See Section 4.6.
[b] Not available. Carbon-14, the only radionuclide COPC in near-shore biota (see Table 4-9), was not analyzed in samples from this ROD area.
[c] Not detected. Carbon-14, the only radionuclide COPC in near-shore biota (see Table 4-9), was analyzed but not detected in samples from this ROD area.

COPC = contaminant of potential concern RME = reasonable maximum exposure
CTE = central tendency exposure ROD = record of decision

Table 4-19. Present-Day Hazard Indices for the Avid Angler Scenario in the Near-Shore Environment.

Exposure Media	RME Hazard Index	CTE Hazard Index
100-B/C ROD Area		
Sediment, river water, dust	0.012	0.0010
Sculpin [a]	2.2	0.19
100-K ROD Area		
Sediment, river water, dust	0.0055	0.00056
Sculpin [a]	2.2	0.32
100-N ROD Area		
Sediment, river water, dust	0.0062	0.00059
Sculpin [a]	1.9	0.28
100-D/100-H ROD Area		
Sediment, river water, dust	0.0060	0.00050
Sculpin [a]	4.3	0.59
100-F/100-IU-2/100-IU-6 ROD Area		
Sediment, river water, dust	0.015	0.0011
Sculpin [a]	2.9	0.26
300 ROD Area		
Sediment, river water, dust	0.015	0.0011
Sculpin [a]	1.7	0.23

NOTE: Hazard index results are for the child receptor.
[a] Screening-level result employing near-shore COPC concentrations in sculpin, a small fish with a limited home range collected in each ROD area and reference area. See Section 4.6.

COPC = contaminant of potential concern
CTE = central tendency exposure
RME = reasonable maximum exposure
ROD = record of decision

Table 4-20. Total Cancer Risk Results for the Avid Hunter Scenario in the River Corridor Upland Environment.

Exposure Media	RME Cancer Risk			CTE Cancer Risk		
	Present Day	2075	2150	Present Day	2075	2150
All media	5E-05	4E-05	4E-05	4E-06	3E-06	3E-06
Soil	3E-06	7E-07	6E-07	2E-07	5E-08	4E-08
Game meat	4E-05	4E-05	4E-05	3E-06	3E-06	3E-06

CTE = central tendency exposure
RME = reasonable maximum exposure

Table 4-21. Total Radiation Dose Results for the Avid Hunter Scenario in the River Corridor Upland Environment.

Exposure Media	RME Radiation Dose (mrem/yr)			CTE Radiation Dose (mrem/yr)		
	Present Day	2075	2150	Present Day	2075	2150
All media	0.18	0.023	0.0061	0.071	0.0098	0.0024
Soil	0.096	0.0062	0.0021	0.031	0.0017	0.00048
Game meat	0.080	0.016	0.0041	0.040	0.0081	0.0019

CTE = central tendency exposure
RME = reasonable maximum exposure

Table 4-22. Hazard Indices for the Avid Hunter Scenario in the River Corridor Upland Environment.

Exposure Media	RME Hazard Index[a]	CTE Hazard Index [a]
	Present Day	Present Day
All media	1.1	0.26
Soil	0.023	0.0018
Game meat	1.1	0.25

[a] Hazard index results are for the child receptor.
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 4-23. Comparison of Modeled and Measured Exposure Point Concentrations in Game Tissue. (2 Pages)

Analyte	Modeled Value [a]	Goose Muscle [b]	Pheasant Muscle [b]	Deer Liver [b]	Deer Muscle [b]	Rabbit Liver [b]
Reasonable Maximum Exposure (mg/kg or pCi/g)						
Antimony	0.0016	NA	NA	NA	NA	1.4
Arsenic	0.021	NA	NA	2.3	NA	0.96
Cadmium	0.0014	NA	NA	0.77	NA	1.6
Chromium	0.13	NA	NA	0.36	NA	0.37
Copper	2.0	NA	NA	76	NA	23
Lead	3.0	NA	NA	0.040	NA	4.3
Mercury	0.060	NA	NA	NA	NA	0.0014
Silver	0.0013	NA	NA	0.039	NA	0.0091
Central Tendency Exposure (mg/kg or pCi/g)						
Antimony	0.00093	NA	NA	NA	NA	0.28
Arsenic	0.016	NA	NA	2.3	NA	0.54
Cadmium	0.00097	NA	NA	0.77	NA	0.99

Table 4-23. Comparison of Modeled and Measured Exposure Point Concentrations in Game Tissue. (2 Pages)

Analyte	Modeled Value [a]	Goose Muscle [b]	Pheasant Muscle [b]	Deer Liver [b]	Deer Muscle [b]	Rabbit Liver [b]
Chromium	0.12	NA	NA	0.35	NA	0.25
Copper	1. 7	NA	NA	76	NA	19
Lead	1.8	NA	NA	0.040	NA	1.5
Mercury	0.036	NA	NA	NA	NA	0.0011
Silver	0.0013	NA	NA	0.039	NA	0.0060

[a] The modeled value is based on free-range beef cattle, as a surrogate for elk and deer, using the 0 to 6-in. River Corridor upland surface soil data collected for the RCBRA investigation.
[b] The five tissue types comprise the media for which Surface Environmental Surveillance Program data are available. The listed analytes include upland soil COPCs detected in one or more of these tissues.

COPC = contaminant of potential concern
NA = not available; not analyzed, or not detected
RCBRA = River Corridor Baseline Risk Assessment

Table 4-24. Total Cancer Risk for the Nonresident Tribal Scenario in the River Corridor. (2 Pages)

Exposure Media	Cancer Risk		
	Present Day	2075	2150
100-B/C ROD Area			
All media [a]	1E-02	1E-02	1E-02
Soil, sediment, water	7E-05	4E-05	4E-05
Plants, game	1E-02	1E-02	1E-02
Sculpin [b]	[c]	--	--
100-K ROD Area			
All media [a]	2E-02	1E-02	1E-02
Soil, sediment, water	6E-05	3E-05	3E-05
Plants, game	2E-02	1E-02	1E-02
Sculpin [b]	3E-04	3E-04	3E-04
100-N ROD Area			
All media [a]	1E-02	1E-02	1E-02
Soil, sediment, water	2E-04	2E-04	2E-04
Plants, game	1E-02	1E-02	1E-02
Sculpin [b]	[d]	--	--
100-D/100-H ROD Area			
All media [a]	1E-02	1E-02	1E-02
Soil, sediment, water	6E-05	3E-05	3E-05
Plants, game	1E-02	1E-02	1E-02

Table 4-24. Total Cancer Risk for the Nonresident Tribal Scenario in the River Corridor. (2 Pages)

Exposure Media	Cancer Risk		
	Present Day	2075	2150
Sculpin [b]	[c]	--	--
100-F/100-IU-2/100-IU-6 ROD Area			
All media [a]	1E-02	1E-02	1E-02
Soil, sediment, water	1E-04	3E-05	3E-05
Plants, game	1E-02	1E-02	1E-02
Sculpin [b]	[c]	--	--
300 ROD Area			
All media [a]	1E-02	1E-02	1E-02
Soil, sediment, water	7E-05	3E-05	3E-05
Plants, game	1E-02	1E-02	1E-02
Sculpin [b]	[c]	--	--

[a] "All media" pathway sum does not include contribution from fish ingestion.
[b] Screening-level result employing near-shore COPC concentrations in sculpin, a small fish with a limited home range collected in each ROD area. See Section 4.6.
[c] Not available. Carbon-14, the only carcinogenic COPC in near-shore biota (see Table 4-9), was not analyzed in samples from this ROD area.
[d] Not detected. Carbon-14, the only carcinogenic COPC in near-shore biota (see Table 4-9), was analyzed but not detected in samples from this ROD area.

-- = not applicable
COPC = contaminant of potential concern
ROD = record of decision

Table 4-25. Total Radiation Dose for the Nonresident Tribal Scenario in the River Corridor. (2 Pages)

Exposure Media	Radiation Dose (mrem/yr)		
	Present Day	2075	2150
100-B/C ROD Area			
All media [a]	11	4.2	1.9
Soil, sediment, water	1.1	0.45	0.38
Plants, game	9.8	3.8	1.5
Sculpin [b]	[c]	--	--
100-K ROD Area			
All media [a]	62	0.80	0.52
Soil, sediment, water	0.75	0.25	0.22
Plants, game	62	0.55	0.31
Sculpin [b]	3.9	3.9	3.9

Table 4-25. Total Radiation Dose for the Nonresident Tribal Scenario in the River Corridor. (2 Pages)

Exposure Media	Radiation Dose (mrem/yr)		
	Present Day	2075	2150
100-N ROD Area			
All media [a]	15	9.4	8.3
Soil, sediment, water	8.4	8.0	7.9
Plants, game	6.6	1.4	0.42
Sculpin [b]	[d]	--	--
100-D/100-H ROD Area			
All media [a]	3.1	0.82	0.45
Soil, sediment, water	0.84	0.23	0.19
Plants, game	2.3	0.59	0.26
Sculpin [b]	[c]	--	--
100-F/100-IU-2/100-IU-6 ROD Area			
All media [a]	8.1	3.0	1.4
Soil, sediment, water	1.6	0.34	0.22
Plants, game	6.5	2.6	1.2
Sculpin [b]	[c]	--	--
300 ROD Area			
All media [a]	2.3	0.90	0.69
Soil, sediment, water	0.97	0.37	0.34
Plants, game	1.3	0.53	0.36
Sculpin [b]	[c]	--	--

[a] Pathway sum does not include contribution from fish ingestion.
[b] Screening-level result employing near-shore COPC concentrations in sculpin, a small fish with a limited home range collected in each ROD area. See Section 4.6.
[c] Not available. Carbon-14, the only radionuclide COPC in near-shore biota (see Table 4-9), was not analyzed in samples from this ROD Area.
[d] Not detected. Carbon-14, the only radionuclide COPC in near-shore biota (see Table 4-9), was analyzed but not detected in samples from this ROD area.

-- = not applicable
COPC = contaminant of potential concern
ROD = record of decision

Table 4-26. Hazard Indices [a] for the Nonresident Tribal Scenario in the River Corridor Upland, Riparian, and Near-Shore Environments.

Exposure Media	Hazard Index
100-B/C ROD Area	
All media [b]	79
Soil, sediment, water	0.96
Plants, game	78
Sculpin [c]	13
100-K ROD Area	
All media [b]	84
Soil, sediment, water	0.71
Plants, game	83
Sculpin [c]	13
100-N ROD Area	
All media [b]	73
Soil, sediment, water	0.76
Plants, game	72
Sculpin [c]	11
100-D/100-H ROD Area	
All media [b]	81
Soil, sediment, water	0.78
Plants, game	80
Sculpin [c]	25
100-F/100-IU-2/100-IU-6 ROD Area	
All media [b]	95
Soil, sediment, water	0.94
Plants, game	94
Sculpin [c]	17
300 ROD Area	
All media [b]	84
Soil, sediment, water	0.93
Plants, game	83
Sculpin [c]	10

[a] Hazard index results are for the child receptor.
[b] Pathway sum does not include contribution from fish ingestion.
[c] Screening-level result employing near-shore COPC concentrations in sculpin, a small fish with a limited home range collected in each ROD area and reference area. See Section 4.6.

COPC = contaminant of potential concern ROD = record of decision

Table 4-27. Short-Term and Long-Term Drinking Water Criteria.

	Short-Term 1-day Health Advisory	Short-Term 10-day Health Advisory	Long-Term WA DOH MCL	Long-Term EPA MCL
Chromium	1 mg/L	1 mg/L	0.1 mg/L	0.1 mg/L
Nitrate (as N)	10 mg/L	10 mg/L	10 mg/L	10 mg/L
Tritium	NA	NA	[a]	20,000 pCi/L
Strontium-90	NA	NA	[a]	8 pCi/L
Technetium-99	NA	NA	[a]	900 pCi/L
Uranium	NA	NA	0.03 mg/L	0.03 mg/L

[a] Radionuclide MCLs referenced to federal standards.

EPA = U.S. Environmental Protection Agency
MCL = maximum contaminant level
WA DOH = Washington State Department of Health

Table 4-28. Comparison of Average Whole Body Key Contaminant Concentrations in Columbia River Fish to Concentrations in Sculpin from Operational Areas (Fresh Weight).

Species	Dioxin-Like PCB Congeners (µg/kg) [a]	Total Arsenic (µg/kg)	Mercury (µg/kg)
Sculpin	2.4 – 2.7 [b]	157	24.1
Columbia River Basin Study (EPA 910-R-02-006, 2002), Resident Species			
Mountain whitefish	10.2	140	67
Walleye	11.7	490	180
White sturgeon	10	370	140
Largescale sucker	5.1	160	130
Bridgelip sucker	2.3	280	32
Rainbow trout	1.6	<50	73
Columbia River Basin Study (EPA 910-R-02-006, 2002), Anadromous Species			
Pacific lamprey	5.5	260	120
Coho salmon	1.3	500	100
Steelhead	1.1	580	100
Fall Chinook salmon	1.0	860	77
Spring Chinook salmon	1.0	830	64
Eulachon	0.5	890	<35
Upper Columbia River Study (EPA Region 10, 2002), Resident Species			
Mountain whitefish	Dioxin-like congener sum is not available	190	80.4
Lake whitefish		260	63.2
Walleye		150	179.9
Largescale sucker		190	190.9
Wild rainbow trout		140	61.4
Hatchery rainbow trout		110	92
Burbot		770	179.4

[a] Sum of PCB 77, PCB 105, PCB 114, PCB 118, PCB 123, PCB 126, PCB 156, PCB 157, PCB 167, PCB 169, and PCB 189. Congener list from Table 1-4e of EPA 910-R-02-006.
[b] First and second result based on substitution of zero, and the reporting limit, for nondetect values.
PCB = polychlorinated biphenyl

EPA 910-R-02-006, 2002, *Columbia River Basin Fish Contaminant Survey 1996-1998*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

Table 4-29. Avid Angler Fish Ingestion Risk Assessment Results Using Sculpin, Clam, Crayfish, and Juvenile Sucker Data. (2 Pages)

	Sculpin	Clam	Crayfish	Juvenile Sucker
100-B/C Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	2.2	4.1	6.8	1.8
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.19	0.36	1.0	0.25
100-K Area				
RME cancer risk	4E-05	4E-04	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	1.6	19	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	2.2	7.6	7.0	1.6
CTE cancer risk	2E-06	2E-05	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	0.24	2.8	No radionuclide COPCs	No radionuclide COPCs
CTE Hazard index	0.32	0.73	1.0	0.23
100-N Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	1.9	2.0	5.9	No COPCs
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.28	0.23	0.87	No COPCs
100-D/100-H Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	4.3	7.9	6.2	No COPCs
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs

Table 4-29. Avid Angler Fish Ingestion Risk Assessment Results Using Sculpin, Clam, Crayfish, and Juvenile Sucker Data. (2 Pages)

	Sculpin	Clam	Crayfish	Juvenile Sucker
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard Index	0.59	0.67	0.92	No COPCs
100-F/100-IU-2/100-IU-6 Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	2.9	5.6	12	1.6
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.26	0.52	0.94	0.23
300 Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	1.7	5.4	6.3	1.3
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.23	0.55	0.65	0.19
Reference Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	1.8	2.4	6.6	1.9
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.22	0.30	0.69	0.28

COPC = contaminant of potential concern
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 4-30. Nonresidential Tribal Fish Ingestion Risk Assessment Results Using Sculpin, Clam, Crayfish, and Juvenile Sucker Data. (2 Pages)

	Sculpin	Clam	Crayfish	Juvenile Sucker
100-B/C Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	13	24	40	11
100-K Area				
Cancer risk	3E-04	3E-03	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	3.9	44	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	13	44	41	9.3
100-N Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	11	12	34	No COPCs
100-D/100-H Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	25	46	36	No COPCs
100-F/100-IU-2/100-6 Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	17	33	68	9.3
300 Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	10	32	37	7.5
Reference Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs

Table 4-30. Nonresidential Tribal Fish Ingestion Risk Assessment Results Using Sculpin, Clam, Crayfish, and Juvenile Sucker Data. (2 Pages)

	Sculpin	Clam	Crayfish	Juvenile Sucker
Hazard index [a]	11	14	39	11

[a] Hazard index results are for the child receptor.
COPC = contaminant of potential concern

Table 4-31. Subsistence Farmer Fish Ingestion Risk Assessment Results Using Sculpin, Clam, Crayfish, and Juvenile Sucker Data. (3 Pages)

	Sculpin	Clam	Crayfish	Juvenile Sucker
100-B/C Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	0.56	1.1	1.8	0.47
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.19	0.36	1.0	0.25
100-K Area				
RME cancer risk	9E-06	1E-04	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	0.43	4.9	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	0.57	2.0	1.8	0.41
CTE cancer risk	2E-06	2E-05	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	0.24	2.8	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.32	0.73	1.0	0.23
100-N Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	0.48	0.52	1.5	No COPCs
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.28	0.23	0.87	No COPCs

Table 4-31. Subsistence Farmer Fish Ingestion Risk Assessment Results Using Sculpin, Clam, Crayfish, and Juvenile Sucker Data. (3 Pages)

	Sculpin	Clam	Crayfish	Juvenile Sucker
100-D/100-H Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	1.1	2.0	1.6	No COPCs
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.59	0.67	0.92	No COPCs
100-IU-2/6 Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	0.76	1.5	3.0	0.41
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.26	0.52	0.94	0.23
300 Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	0.45	1.4	1.6	0.33
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.23	0.55	0.65	0.19
Reference Area				
RME cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
RME radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
RME hazard index	0.48	0.62	1.7	0.49
CTE cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs

Table 4-31. Subsistence Farmer Fish Ingestion Risk Assessment Results Using Sculpin, Clam, Crayfish, and Juvenile Sucker Data. (3 Pages)

	Sculpin	Clam	Crayfish	Juvenile Sucker
CTE radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
CTE hazard index	0.22	0.30	0.69	0.28

COPC = contaminant of potential concern
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 4-32. CTUIR Fish Ingestion Risk Assessment Results Using Sculpin, Clam, Crayfish, and Juvenile Sucker Data. (2 Pages)

	Sculpin	Clam	Crayfish	Juvenile Sucker
100-B/C Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	12	23	39	10
100-K Area				
Cancer risk	3E-04	3E-03	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	3.9	44	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	12	43	40	8.9
100-N Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	10	11	33	No COPCs
100-D/100-H Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	24	44	35	No COPCs

Table 4-32. CTUIR Fish Ingestion Risk Assessment Results Using Sculpin, Clam, Crayfish, and Juvenile Sucker Data. (2 Pages)

	Sculpin	Clam	Crayfish	Juvenile Sucker
100-F/100-IU-2/100-IU-6 Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	16	32	66	8.9
300 Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	9.8	31	36	7.2
Reference Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	10	13	37	11

[a] Hazard index results are for the child receptor.
COPC = contaminant of potential concern
CTUIR = Confederated Tribes of the Umatilla Indian Reservation

Table 4-33. Yakama Fish Ingestion Risk Assessment Results Using Sculpin, Clam, Crayfish, and Juvenile Sucker Data. (2 Pages)

	Sculpin	Clam	Crayfish	Juvenile Sucker
100-B/C Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	15	29	47	12
100-K Area				
Cancer risk	2E-04	2E-03	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	3.7	42	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	15	52	48	11

Table 4-33. Yakama Fish Ingestion Risk Assessment Results Using Sculpin, Clam, Crayfish, and Juvenile Sucker Data. (2 Pages)

	Sculpin	Clam	Crayfish	Juvenile Sucker
100-N Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	13	14	40	No COPCs
100-D/100-H Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	30	54	42	No COPCs
100-F/100-IU-2/100-IU-6 Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	20	38	80	11
300 Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	12	37	43	8.7
Reference Area				
Cancer risk	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs	No carcinogenic COPCs
Radiation dose (mrem/yr)	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs	No radionuclide COPCs
Hazard index [a]	13	16	45	13

[a] Hazard index results are for the child receptor.

COPC = contaminant of potential concern

Table 4-34. Summary of Analytes that Did Not Meet Target Soil Practical Quantitation Limits. (2 Pages)

Analyte	Performance Requirements [a]			Highest Nondetect Value	Consider as Uncertainty?	Reason
	Target PQL	Soil Direct Contact Human Health Protection Value	Soil Groundwater Human Health Protection Value			
Riparian Environment						
Polycyclic Aromatic Hydrocarbon (mg/kg)						
Acenaphthene	0.1	4,800	121	0.67	No	Greater than target PQL but less than human health reference levels
Acenaphthylene	0.1	4,800	98	0.67	No	Greater than target PQL but less than human health reference levels
Fluorene	0.03	3,200	101	0.67	No	Greater than target PQL but less than human health reference levels
Naphthalene	0.1	1,600	4.5	0.67	No	Greater than target PQL but less than human health reference levels
Polychlorinated Biphenyl (mg/kg)						
Aroclor-1016	0.0165	0.5 [b]	0.093 [b]	0.018	No	Greater than target PQL but less than human health reference levels
Aroclor-1221	0.0165	0.5 [b]	0.093 [b]	0.018	No	Greater than target PQL but less than human health reference levels
Aroclor-1232	0.0165	0.5	0.093	0.018	No	Greater than target PQL but less than human health reference levels
Aroclor-1242	0.0165	0.5	0.39	0.018	No	Greater than target PQL but less than human health reference levels
Aroclor-1248	0.0165	0.5 [c]	0.39 [c]	0.018	No	Greater than target PQL but less than human health reference levels
Pesticide (mg/kg)						
Toxaphene	0.005	NA	NA	0.018	Yes	Greater than target PQL and no human health reference level
Radionuclide (pCi/g)						
Europium-154	0.1	3	Infinite	0.75	No	Greater than target PQL but less than human health reference levels
Cobalt-60	0.05	1.4	13,900	0.24	No	Greater than target PQL but less than human health reference levels
Semivolatile Organic Analyses (mg/kg)						
1,2,4-Trichlorobenzene	0.33	800	3	0.67	No	Greater than target PQL but less than human health reference levels
1,2-Dichlorobenzene	0.33	7,200	7	0.67	No	Greater than target PQL but less than human health reference levels
2,4,5-Trichlorophenol	0.33	8,000	58	1.7	No	Greater than target PQL but less than human health reference levels
2,4,6-Trichlorophenol	0.33	91	0.094	0.67	Yes	Greater than target PQL and above groundwater protection level
Dibenzofuran	0.33	160	30	0.67	No	Greater than target PQL but less than human health reference levels
Semivolatile Organic Compound (mg/kg)						
Pentachlorophenol	0.33	8.3	0.012	1.7	Yes	Greater than Target PQL and above groundwater protection level
Upland Environment						
Polychlorinated Biphenyl (mg/kg)						
Aroclor-1016	0.0165	0.5 [b]	0.093 [b]	1.3	Yes	Greater than target PQL and above direct contact and groundwater protection levels

Table 4-34. Summary of Analytes that Did Not Meet Target Soil Practical Quantitation Limits. (2 Pages)

Analyte	Performance Requirements [a]			Highest Nondetect Value	Consider as Uncertainty?	Reason
	Target PQL	Soil Direct Contact Human Health Protection Value	Soil Groundwater Human Health Protection Value			
Aroclor-1221	0.0165	0.5 [b]	0.093 [b]	1.3	Yes	Greater than target PQL and above direct contact and groundwater protection levels
Aroclor-1232	0.0165	0.5	0.093	1.3	Yes	Greater than target PQL and above direct contact and groundwater protection levels
Aroclor-1242	0.0165	0.5	0.39	1.3	Yes	Greater than target PQL and above direct contact and groundwater protection levels
Pesticide (mg/kg)						
Delta-BHC	0.005	NA	NA	0.033	Yes	Greater than target PQL and no human health reference level
Gamma-BHC (lindane)	0.005	NA	NA	0.033	Yes	Greater than target PQL and no human health reference level
Heptachlor epoxide	0.005	NA	NA	0.033	Yes	Greater than target PQL and no human health reference level
Toxaphene	0.005	NA	NA	0.33	Yes	Greater than target PQL and no human health reference level
Radionuclide (pCi/g)						
Europium-154	0.1	37.4	[d]	0.58	No	Maximum detection limit well below human health reference level
Semivolatile Organic Analyses (mg/kg)						
1,2,4-Trichlorobenzene	0.33	800	3	0.67	No	Greater than target PQL but less than human health reference levels
1,2-Dichlorobenzene	0.33	7,200	7	0.67	No	Greater than target PQL but less than human health reference levels
2,4,5-Trichlorophenol	0.33	8,000	58	1.7	No	Greater than target PQL but less than human health reference levels
2,4,6-Trichlorophenol	0.33	91	0.094	0.67	Yes	Greater than target PQL and above groundwater protection level

= Exceeds human health reference level.

[a] Values from Table 2-2 of DOE/RL-2005-42, *100 Area and 300 Area Component of the RCBRA Sampling and Analysis Plan.*
[b] Value for Aroclor-1232 used as a surrogate.
[c] Value for Aroclor-1242 used as a surrogate.
[d] Did not reach groundwater within a 1,000-year modeling period.

BHC = benzene hexachloride
NA = not available in DOE/RL-2005-42
PQL = practical quantitation limit

DOE/RL-2005-42, 2006, *100 Area and 300 Area Component of the RCBRA Sampling and Analysis Plan*, Rev. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Table 4-35. Summary of Analytes that Did Not Meet Target Surface Water Practical Quantitation Limits. (3 Pages)

Analyte	Performance Requirements [a]		Highest Nondetect Value	Consider as Uncertainty?	Reason
	Target PQL	Human Health Protection Value			
Pesticide (µg/L)					
Methoxychlor	0.05	5.4	0.062	No	Greater than target PQL but less than human health reference level
Radionuclides (pCi/g)					
Cesium-137	15	60	25	No	Greater than target PQL but less than human health reference level
Cobalt-60	25	100	26	No	Greater than target PQL but less than human health reference level
Semivolatile Organic Compounds (µg/L)					
1,2,4-Trichlorobenzene	10	--	11	No	Target PQL approximately equal to maximum detection limit
1,2-Dichlorobenzene	10	--	11	No	Target PQL approximately equal to maximum detection limit
1,3-Dichlorobenzene	10	--	11	No	Target PQL approximately equal to maximum detection limit
1,4-Dichlorobenzene	10	--	11	No	Target PQL approximately equal to maximum detection limit
2,4,5-Trichlorophenol	26	--	28	Yes	Greater than target PQL and no human health protection level
2,4,6-Trichlorophenol	10	--	11	No	Target PQL approximately equal to maximum detection limit
2,4-Dichlorophenol	10	--	11	No	Target PQL approximately equal to maximum detection limit
2,4-Dimethylphenol	10	--	11	No	Target PQL approximately equal to maximum detection limit
2,4-Dinitrophenol	26	--	28	Yes	Greater than target PQL and no human health protection level
2,4-Dinitrotoluene	10	--	11	No	Target PQL approximately equal to maximum detection limit
2,6-Dinitrotoluene	10	--	11	No	Target PQL approximately equal to maximum detection limit
2-Chloronaphthalene	10	--	11	No	Target PQL approximately equal to maximum detection limit
2-Chlorophenol	10	--	11	No	Target PQL approximately equal to maximum detection limit
2-Methylnaphthalene	10	--	11	No	Target PQL approximately equal to maximum detection limit
2-Methylphenol [cresol,o-]	10	--	11	No	Target PQL approximately equal to maximum detection limit
2-Nitroaniline	26	--	28	Yes	Greater than target PQL and no human health protection level
2-Nitrophenol	10	--	11	No	Target PQL approximately equal to maximum detection limit
3,3'-Dichlorobenzidine	10	--	11	No	Target PQL approximately equal to maximum detection limit
3-Nitroaniline	26	--	28	Yes	Greater than target PQL and no human health protection level
4,6-Dinitro-2-methylphenol	26	--	28	Yes	Greater than target PQL and no human health protection level
4-Bromophenylphenyl ether	10	--	11	No	Target PQL approximately equal to maximum detection limit
4-Chloro-3-methylphenol	10	--	11	No	Target PQL approximately equal to maximum detection limit

Table 4-35. Summary of Analytes that Did Not Meet Target Surface Water Practical Quantitation Limits. (3 Pages)

Analyte	Performance Requirements [a]		Highest Nondetect Value	Consider as Uncertainty?	Reason
	Target PQL	Human Health Protection Value			
4-Chloroaniline	10	--	11	No	Target PQL approximately equal to maximum detection limit
4-Chlorophenylphenyl ether	10	--	11	No	Target PQL approximately equal to maximum detection limit
4-Nitroaniline	26	--	28	Yes	Greater than target PQL and no human health protection level
4-Nitrophenol	26	--	28	Yes	Greater than target PQL and no human health protection level
Acenaphthene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Acenaphthylene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Anthracene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Benzo[a]anthracene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Benzo[a]pyrene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Benzo[b]fluoranthene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Benzo[ghi]perylene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Benzo[k]fluoranthene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Bis[2-chloro-1-methylethyl]ether	10	--	11	No	Target PQL approximately equal to maximum detection limit
Bis[2-Chloroethoxy] methane	10	--	11	No	Target PQL approximately equal to maximum detection limit
Bis[2-chloroethyl] ether	10	--	11	No	Target PQL approximately equal to maximum detection limit
Butylbenzylphthalate	10	--	11	No	Target PQL approximately equal to maximum detection limit
Carbazole	10	--	11	No	Target PQL approximately equal to maximum detection limit
Chrysene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Dibenz[a,h]anthracene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Dibenzofuran	10	--	11	No	Target PQL approximately equal to maximum detection limit
Diethylphthalate	10	--	11	No	Target PQL approximately equal to maximum detection limit
Di-n-octylphthalate	10	--	11	No	Target PQL approximately equal to maximum detection limit
Fluoranthene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Fluorene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Hexachlorobutadiene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Hexachlorocyclopentadiene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Hexachloroethane	10	--	11	No	Target PQL approximately equal to maximum detection limit
Indeno[1,2,3-cd]pyrene	10	--	11	No	Target PQL approximately equal to maximum detection limit

Table 4-35. Summary of Analytes that Did Not Meet Target Surface Water Practical Quantitation Limits. (3 Pages)

Analyte	Performance Requirements [a]		Highest Nondetect Value	Consider as Uncertainty?	Reason
	Target PQL	Human Health Protection Value			
Isophorone	10	--	11	No	Target PQL approximately equal to maximum detection limit
Naphthalene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Nitrobenzene	10	--	11	No	Target PQL approximately equal to maximum detection limit
N-Nitroso-di-n-dipropylamine	10	--	11	No	Target PQL approximately equal to maximum detection limit
Pentachlorophenol	26	--	28	Yes	Greater than target PQL and no human health protection level
Phenanthrene	10	--	11	No	Target PQL approximately equal to maximum detection limit
Phenol	10	--	11	No	Target PQL approximately equal to maximum detection limit
Pyrene	10	--	11	No	Target PQL approximately equal to maximum detection limit

= Exceeds human health protection level.

[a] Values from Table 2-3 of DOE/RL-2005-42, *100 Area and 300 Area Component of the RCBRA Sampling and Analysis Plan.*

-- = not applicable

PQL = practical quantitation limit

DOE/RL-2005-42, 2006, *100 Area and 300 Area Component of the RCBRA Sampling and Analysis Plan*, Rev. 1, U.S. Department of Energy, Richland Operations, Richland, Washington.

Table 5-1. Waste Sites Included in the Human Health Risk Assessment (164 Total). (3 Pages)

Site Code	Cleanup Verification Package Document Identification	Site Code	Cleanup Verification Package Document Identification
100-B/C Decision Area			
100-B-11	WSRF 2004-003	116-B-9	CVP-99-00009
100-B-14:3	WSRF 2004-007	116-C-1	CVP-98-00006
100-B-14:5	WSRF 2004-009	116-C-2A	CVP-99-00019
100-B-14:6	WSRF 2004-010	116-C-5	CVP-99-00004
100-B-14:7	WSRF 2004-011	116-C-6	WSRF 2003-34
100-B-16	WSRF 2005-009	118-B-10	CVP-2004-00004
100-B-5	CVP-2003-00014	118-B-3	CVP-2005-00001
100-B-8:1	CVP-2003-00022	118-B-4	CVP-2004-00002
100-B-8:2	CVP-2003-00019	118-B-5	CVP-2004-00003
100-C-3	CVP-2003-00009	118-B-9	WSRF 2004-004
100-C-9:3	WSRF 2004-014	118-C-2	CVP-2004-00005
116-B-1	CVP-99-00012	118-C-4	CVP-2003-00015
116-B-10	CVP-99-00010	128-B-2	WSRF 2005-038
116-B-11	CVP-99-00001	128-C-1	WSRF 2005-019
116-B-12	CVP-99-00008	1607-B10	CVP-2003-00007
116-B-13	CVP-99-00002	132-B-6	CVP-2002-00003
116-B-14	CVP-99-00003	132-C-2	CVP-2002-00003
116-B-15	WSRF 2003-052	1607-B11	CVP-2003-00008
116-B-2	CVP-99-00015	1607-B7	CVP-2003-00004
116-B-3	CVP-99-00013	1607-B8	CVP-2003-00005
116-B-4	CVP-99-00014	1607-B9	CVP-2003-00006
116-B-6A	CVP-99-00011	600-232	WSRF 2004-066
116-B-6B	CVP-99-00017	600-233	WSRF-2005-041
116-B-7	CVP-2002-00003		
100-D/100-H Decision Area			
100-D-12	CVP-2000-00016	116-DR-4	CVP-2000-00015
100-D-20	CVP-98-00003	116-DR-6	CVP-2000-00014
100-D-21	CVP-98-00002	116-DR-7	CVP-2000-00019
100-D-22	CVP-98-00001	116-DR-9	CVP-99-00006
100-D-4	CVP-98-00004	118-DR-2:2	CVP-2003-00016
100-D-48:1	CVP-2000-00003	122-DR-1:2	CVP-2003-00018
100-D-48:2	CVP-2000-00005	1607-D2:1	CVP-98-00005
100-D-48:3	CVP-2000-00034	1607-D2:3	CVP-2000-00004
100-D-48:4	CVP-2000-00033	1607-D2:4	CVP-99-00005
100-D-49:2	CVP-2000-00005	1607-D4	WSRF 2005-036
100-D-49:4	CVP-2003-00016	100-H-17	CVP-2000-00031
100-D-52	CVP-2000-00018	100-H-21	CVP-2000-00029
116-D-1A	CVP-2000-00010	100-H-24	CVP-2000-00030

Table 5-1. Waste Sites Included in the Human Health Risk Assessment (164 Total). (3 Pages)

Site Code	Cleanup Verification Package Document Identification	Site Code	Cleanup Verification Package Document Identification
116-D-2	CVP-2000-00013	100-H-5	CVP-2000-00028
116-D-4	CVP-2000-00008	116-H-1	CVP-2000-00026
116-D-7	CVP-99-00007	116-H-7	CVP-2000-00027
116-D-9	CVP-2000-00012	1607-H2	CVP-2000-00024
116-DR-1&2	CVP-2000-00002	1607-H4	CVP-2000-00025
100-F/100-IU-2/100-IU-6 Decision Area			
100-F-23	CVP-2003-00011	118-F-8:1	CVP-2003-00017
100-F-24	CVP-2003-00012	1607-F2	CVP-2002-00005
100-F-25	CVP-2003-00010	1607-F6	CVP-2001-00010
100-F-26:1	WSRF 2005-008	UPR-100-F-2	CVP-2001-00011
100-F-26:2	WSRF 2005 005	100-F-11	CVP-2002-00001
100-F-26:5	WSRF 2005-007	100-F-12	WSRF 2004-126
100-F-26:7	WSRF 2005-010	100-F-14	WSRF 2004-127
100-F-35	CVP-2002-00007	100-F-15	CVP-2002-00001
100-F-37	WSRF 2004-095	100-F-16	CVP-2002-00001
100-F-38	WSRF 2004-093	100-F-18	WSRF 2004-137
100-F-4	CVP-2002-00001	100-F-19:1	CVP-2001-00002
100-F-7	WSRF 2004-124	100-F-19:2	CVP-2001-00003
100-F-9	WSRF 2004-125	100-F-2	CVP-2001-00001
116-F-1	CVP-2002-00009	600-128	WSRF 2003-39
116-F-10	CVP-2003-00003	600-131	WSRF 2003-45
116-F-11	CVP-2001-00003	600-132	WSRF 2003-040
116-F-14	CVP-2001-00009	600-181	WSRF 2003-048
116-F-2	CVP-2001-00005	600-190	WSRF 2003-047
116-F-3	CVP-2002-00008	628-1	WSRF 2003-46
116-F-4	CVP-2001-00006	600-107	WSRF 2003-033
116-F-5	CVP-2001-00007	600-204	WSRF 2003-43
116-F-6	CVP-2002-00010	600-23	CVP-2001-00020
116-F-7	WSRF 2004-128	600-235 [a]	WSRF 2001-091
116-F-9	CVP-2001-00008		
100-K Decision Area			
100-K-29	WSRF 2004-040	116-K-1	CVP-2003-00024
100-K-30	WSRF 2003-036	116-K-2	CVP-2006-00001
100-K-31	WSRF 2004-038	116-KE-4	CVP-2005-00002
100-K-32	WSRF 2004–039	116-KE-5	CVP-2005-00006
100-K-33	WSRF 2004-041	116-KW-3	CVP-2004-00001
100-K-55:1	CVP-2005-00006	116-KW-4	CVP-2005-00006
100-K-56:1	CVP-2005-00006	128-K-1	WSRF 2004-042

Table 5-1. Waste Sites Included in the Human Health Risk Assessment (164 Total). (3 Pages)

Site Code	Cleanup Verification Package Document Identification	Site Code	Cleanup Verification Package Document Identification
300 Decision Area			
300 Ash Pits	BHI-01132	316-2	BHI-01298
300 VTS	CVP-2005-00009	316-5	BHI-01164
300-10	BHI-01134	600-259	CVP-2005-00008
300-18	CVP-2005-00004	600-47	CVP-2005-00005
300-45	BHI-01136	618-12	BHI-01298
300-49	CVP-2000-00020	618-4	CVP-2003-00020
300-50	CVP-2000-00021	618-5	CVP-2003-00021
300-8	CVP-2005-00007	628-4	CVP-2003-00001
316-1	CVP-2003-00002	JA Jones	CVP-2001-00019
100-N Decision Area			
116-N-3	CVP-2002-00002	120-N-1	CVP-2001-00021

NOTE: Cleanup verification package documents can be accessed through the Administrative Record online (http://www5.hanford.gov/arpir/) and in the Hanford Technical Library at Washington State University in Richland, Washington.

[a] 600-235 refers to buried communication cables that cross multiple decision areas; the site has been assigned to 100-F/100-IU-2/100-IU-6.

Table 5-2. Grouping of Results for the Waste Site Soil Risk Assessment Using Present-Day Radionuclide Activities, Occupational Scenarios.

Scenario and Calculation	100-B/C	100-K	100-N	100-D/100-H	100-F/100-IU-2/100-IU-6	300
RME Cancer Risk (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Industrial/Commercial: Soil, total risk [a]	19 | 24 | 2	6 | 7 | 0	1 | 1 | 0	3 | 31 | 1	25 | 18 | 1	3 | 14 | 0
Resident National Monument/Refuge: Soil, total risk [a]	1 | 39 | 5	1 | 11 | 1	1 | 1 | 0	2 | 32 | 1	1 | 42 | 1	1 | 13 | 3
RME Radiation Dose (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Industrial/Commercial: Soil, total dose [a]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0
Resident National Monument/Refuge: Soil, total dose [a]	43 | 2	13 | 0	2 | 0	35 | 0	43 | 1	17 | 0
RME Hazard Index (Number of Sites <1 | 1 – 10 | >10)						
Industrial/Commercial: Soil, hazard index [a]	45 | 0 | 0	13 | 0 | 0	2 | 0 | 0	35 | 0 | 0	44 | 0 | 0	17 | 0 | 0
Resident National Monument/Refuge: Soil, hazard index [a]	45 | 0 | 0	13 | 0 | 0	2 | 0 | 0	35 | 0 | 0	44 | 0 | 0	17 | 0 | 0
CTE Cancer Risk (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Industrial/Commercial: Soil, total risk [a]	25 | 20 | 0	7 | 6 | 0	1 | 1 | 0	16 | 19 | 0	33 | 11 | 0	11 | 6 | 0
Resident National Monument/Refuge: Soil, total risk [a]	1 | 44 | 0	1 | 12 | 0	1 | 1 | 0	2 | 33 | 0	1 | 43 | 0	1 | 16 | 0
CTE Radiation Dose (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Industrial/Commercial: Soil, total dose [a]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0
Resident National Monument/Refuge: Soil, total dose [a]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0
CTE Hazard Index (Number of Sites <1 | 1 – 10 | >10)						
Industrial/Commercial: Soil, hazard index [a]	45 | 0 | 0	13 | 0 | 0	2 | 0 | 0	35 | 0 | 0	44 | 0 | 0	17 | 0 | 0
Resident National Monument/Refuge: Soil, hazard index [a]	45 | 0 | 0	13 | 0 | 0	2 | 0 | 0	35 | 0 | 0	44 | 0 | 0	17 | 0 | 0

[a] Total risk, dose, and hazard calculated using remediated waste site EPCs.

CTE = central tendency exposure
EPC = exposure point concentration
RME = reasonable maximum exposure

Table 5-3. Grouping of Results for the Waste Site Soil Risk Assessment Using Radionuclide Activities at Year 2075, Occupational Scenarios.

Scenario and Calculation	100-B/C	100-K	100-N	100-D/100-H	100-F/100-IU-2/100-IU-6	300
RME Cancer Risk at Year 2075 (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Industrial/Commercial: Soil, total risk [a]	27 | 18 | 0	6 | 7 | 0	2 | 0 | 0	13 | 22 | 0	30 | 14 | 0	4 | 13 | 0
Resident National Monument/Refuge: Soil, total risk [a]	1 | 44 | 0	1 | 12 | 0	1 | 1 | 0	2 | 33 | 0	1 | 43 | 0	1 | 15 | 1
RME Radiation Dose at Year 2075 (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Industrial/Commercial: Soil, total dose [a]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0
Resident National Monument/Refuge: Soil, total dose [a]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0
CTE Cancer Risk at Year 2075 (Number of Sites < 1E-06 | 1E-06 – 1E-04 | > 1E-04)						
Industrial/Commercial: Soil, total risk [a]	41 | 4 | 0	13 | 0 | 0	2 | 0 | 0	33 | 2 | 0	44 | 0 | 0	12 | 5 | 0
Resident National Monument/Refuge: Soil, total risk [a]	36 | 9 | 0	10 | 3 | 0	2 | 0 | 0	25 | 10 | 0	39 | 5 | 0	8 | 9 | 0
CTE Radiation Dose at Year 2075 (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Industrial/Commercial: Soil, total dose [a]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0
Resident National Monument/Refuge: Soil, total dose [a]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0

[a] Total risk and dose calculated using remediated waste site EPCs.

CTE = central tendency exposure
EPC = exposure point concentration
RME = reasonable maximum exposure

Table 5-4. Grouping of Results for the Waste Site Soil Risk Assessment Using Radionuclide Activities at Year 2150, Occupational Scenarios.

Scenario and Calculation	100-B/C	100-K	100-N	100-D/100-H	100-F/100-IU-2/100-IU-6	300
RME Cancer Risk at Year 2150 (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Industrial/Commercial: Soil, total risk [a]	35 | 10 | 0	11 | 2 | 0	2 | 0 | 0	19 | 16 | 0	36 | 8 | 0	4 | 13 | 0
Resident National Monument/Refuge: Soil, total risk [a]	1 | 44 | 0	1 | 12 | 0	1 | 1 | 0	2 | 33 | 0	1 | 43 | 0	1 | 15 | 1
RME Radiation Dose at Year 2150 (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Industrial/Commercial: Soil, total dose [a]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0
Resident National Monument/Refuge: Soil, total dose [a]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0
CTE Cancer Risk at Year 2150 (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Industrial/Commercial: Soil, total risk [a]	45 | 0 | 0	13 | 0 | 0	2 | 0 | 0	35 | 0 | 0	44 | 0 | 0	12 | 5 | 0
Resident National Monument/Refuge: Soil, total risk [a]	45 | 0 | 0	13 | 0 | 0	2 | 0 | 0	34 | 1 | 0	43 | 1 | 0	11 | 6 | 0
CTE Radiation Dose at Year 2150 (Number of Sites ≤15 mrem/yr | > 15mrem/yr)						
Industrial/Commercial: Soil, total dose [a]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0
Resident National Monument/Refuge: Soil, total dose [a]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0

[a] Total risk and dose calculated using remediated waste site EPCs.

CTE = central tendency exposure
EPC = exposure point concentration
RME = reasonable maximum exposure

Table 5-5. Grouping of Results for the Waste Site Soil Risk Assessment Using Present-Day Radionuclide Activities, Residential Scenarios.

Scenario and Calculation	100-B/C	100-K	100-N	100-D/100-H	100-F/100-IU-2/100-IU-6	300
RME Cancer Risk (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Subsistence Farmer: Soil, total risk [a, b]	10 | 25 | 10	1 | 0 | 12	1 | 1 | 0	2 | 15 | 18	4 | 13 | 27	1 | 4 | 12
CTUIR: Soil, total risk [a, b]	9 | 16 | 20	1 | 0 | 12	1 | 1 | 0	2 | 6 | 27	4 | 2 | 38	1 | 4 | 12
Yakama: Soil, total risk [a, b]	9 | 14 | 22	1 | 0 | 12	1 | 1 | 0	2 | 6 | 27	4 | 2 | 38	1 | 4 | 12
RME Radiation Dose (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Subsistence Farmer: Soil, total dose [a, b]	38 | 7	10 | 3	2 | 0	32 | 3	41 | 3	14 | 3
CTUIR: Soil, total dose [a, b]	36 | 9	8 | 5	2 | 0	29 | 6	39 | 5	14 | 3
Yakama: Soil, total dose [a, b]	35 | 10	7 | 6	2 | 0	25 | 10	39 | 5	14 | 3
RME Hazard Index (Number of Sites <1 | 1 – 10 | >10)						
Subsistence Farmer: Soil, hazard index [a, b]	28 | 14 | 2	7 | 2 | 4	2 | 0 | 0	24 | 9 | 2	19 | 24 | 1	5 | 6 | 6
CTUIR: Soil, hazard index [a, b]	11 | 24 | 10	7 | 0 | 6	1 | 1 | 0	22 | 2 | 11	18 | 3 | 23	5 | 0 | 12
Yakama: Soil, hazard index [a, b]	11 | 23 | 11	7 | 0 | 6	1 | 1 | 0	22 | 4 | 9	18 | 2 | 24	5 | 0 | 12
CTE Cancer Risk (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Subsistence Farmer: Soil, total risk [a, b]	14 | 31 | 0	1 | 12 | 0	1 | 1 | 0	2 | 32 | 1	4 | 39 | 1	2 | 10 | 5
CTE Radiation Dose (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Subsistence Farmer: Soil, total dose [a, b]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	15 | 2
CTE Hazard Index (Number of Sites <1 | 1 – 10 | >10)						
Subsistence Farmer: Soil, hazard index [a, b]	37 | 8 | 0	8 | 1 | 4	2 | 0 | 0	27 | 8 | 0	30 | 14 | 0	7 | 9 | 1

[a] Total risk, dose, and hazard calculated using remediated waste site EPCs.
[b] Risks presented include beef and milk ingestion from penned cattle (fed with fodder raised on soils represented by cleanup verification data) rather than grazed livestock.

CTE = central tendency exposure
CTUIR = Confederated Tribes of the Umatilla Indian Reservation
EPC = exposure point concentration
RME = reasonable maximum exposure

Table 5-6. Grouping of Results for the Waste Site Soil Risk Assessment Using Radionuclide Activities at Year 2075, Residential Scenarios.

Scenario and Calculation	100-B/C	100-K	100-N	100-D/100-H	100-F/100-IU-2/100-IU-6	300
RME Cancer Risk at Year 2075 (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Subsistence Farmer: Soil, total risk [a, b]	11 | 33 | 1	1 | 6 | 6	2 | 0 | 0	2 | 22 | 11	4 | 17 | 23	3 | 2 | 12
CTUIR: Soil, total risk [a, b]	9 | 29 | 7	1 | 3 | 9	2 | 0 | 0	2 | 20 | 13	4 | 15 | 25	1 | 4 | 12
Yakama: Soil, total risk [a, b]	9 | 26 | 10	1 | 2 | 10	2 | 0 | 0	2 | 17 | 16	4 | 14 | 26	1 | 4 | 12
RME Radiation Dose at Year 2075 (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Subsistence Farmer: Soil, total dose [a, b]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	15 | 2
CTUIR: Soil, total dose [a, b]	44 | 1	13 | 0	2 | 0	35 | 0	44 | 0	15 | 2
Yakama: Soil, total dose [a, b]	44 | 1	13 | 0	2 | 0	35 | 0	43 | 1	15 | 2
CTE Cancer Risk at Year 2075 (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Subsistence Farmer: Soil, total risk [a, b]	18 | 27 | 0	1 | 12 | 0	2 | 0 | 0	7 | 27 | 1	12 | 31 | 1	3 | 9 | 5
CTE Radiation Dose at Year 2075 (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Subsistence Farmer: Soil, total dose [a, b]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	15 | 2

[a] Total risk and dose calculated using remediated waste site EPCs.
[b] Risks presented include beef and milk ingestion from penned cattle (fed with fodder raised on soils represented by cleanup verification data) rather than grazed livestock.

CTE = central tendency exposure
CTUIR = Confederated Tribes of the Umatilla Indian Reservation
EPC = exposure point concentration
RME = reasonable maximum exposure

Table 5-7. Grouping of Results for the Waste Site Soil Risk Assessment Using Radionuclide Activities at Year 2150, Residential Scenarios.

Scenario and Calculation	100-B/C	100-K	100-N	100-D/100-H	100-F/100-IU-2/100-IU-6	300
RME Cancer Risk at Year 2150 (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Subsistence Farmer: Soil, total risk [a, b]	12 | 33 | 0	1 | 6 | 6	2 | 0 | 0	4 | 20 | 11	11 | 10 | 23	3 | 2 | 12
CTUIR: Soil, total risk [a, b]	10 | 34 | 1	1 | 6 | 6	2 | 0 | 0	3 | 21 | 11	5 | 16 | 23	3 | 2 | 12
Yakama: Soil, total risk [a, b]	9 | 35 | 1	1 | 6 | 6	2 | 0 | 0	3 | 21 | 11	5 | 16 | 23	3 | 2 | 12
RME Radiation Dose at Year 2150 (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Subsistence Farmer: Soil, total dose [a, b]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	15 | 2
CTUIR: Soil, total dose [a, b]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	15 | 2
Yakama: Soil, total dose [a, b]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	15 | 2
CTE Cancer Risk at Year 2150 (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Subsistence Farmer: Soil, total risk [a, b]	21 | 24 | 0	2 | 11 | 0	2 | 0 | 0	15 | 19 | 1	16 | 27 | 1	3 | 10 | 4
CTE Radiation Dose at Year 2150 (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Subsistence Farmer: Soil, total dose [a, b]	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	16 | 1

[a] Total risk and dose calculated using remediated waste site exposure point concentrations.
[b] Risks presented include beef and milk ingestion from penned cattle (fed with fodder raised on soils represented by cleanup verification data) rather than grazed livestock.

CTE = central tendency exposure
CTUIR = Confederated Tribes of the Umatilla Indian Reservation
RME = reasonable maximum exposure

Table 5-8. Summary of Waste Site Soil Data Used for 100-B/C Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Aluminum	16	16	0	1.00	4,100	11,400	--	--
Antimony	52	13	39	0.25	0.23	2.7	0.17	2.22
Arsenic	122	104	18	0.85	1.6	7.2	2.4	2.5
Barium	122	122	0	1.00	28.6	364	--	--
Beryllium	54	53	1	0.98	0.051	1.3	0.041	0.041
Boron	54	41	13	0.76	0.26	22.9	1.2	1.3
Cadmium	122	72	50	0.59	0.02	2.3	0.02	0.21
Calcium	16	16	0	1.00	4,510	31,100	--	--
Calculated total uranium	265	259	6	0.98	0.488	4.47	0.000020	0.96
Chromium	349	349	0	1.00	3	46.5	--	--
Cobalt	54	54	0	1.00	5.3	10.2	--	--
Copper	54	54	0	1.00	8.4	114	--	--
Hexavalent chromium	287	38	249	0.13	0.04	1.8	0.03	4.4
Iron	16	16	0	1.00	15,200	26,700	--	--
Lead	349	309	40	0.89	0.96	247	2.2	18.4
Lithium	14	14	0	1.00	3.4	8.9	--	--
Magnesium	16	16	0	1.00	3,240	7,460	--	--
Manganese	54	54	0	1.00	157	446	--	--
Mercury	344	104	240	0.30	0.015	1.4	0.01	0.03
Molybdenum	54	25	29	0.46	0.223	1.9	0.2	0.94
Nickel	54	54	0	1.00	6.6	22.7	--	--
Potassium	16	16	0	1.00	611	1,610	--	--
Selenium	122	11	111	0.09	0.372	3	0.0035	2.8
Silicon	30	30	0	1.00	125	857	--	--
Silver	122	10	112	0.08	0.082	6.6	0.0025	0.51
Sodium	16	16	0	1.00	115	498	--	--
Vanadium	54	54	0	1.00	16.6	71.6	--	--
Zinc	54	54	0	1.00	22.7	250	--	--

Table 5-8. Summary of Waste Site Soil Data Used for 100-B/C Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Organics (mg/kg)								
1,1,1-Trichloroethane	30	0	30	0.00	--	--	0.004	0.006
1,1,2,2-Tetrachloroethane	30	0	30	0.00	--	--	0.004	0.006
1,1,2-Trichloroethane	30	0	30	0.00	--	--	0.004	0.006
1,1-Dichloroethane	30	0	30	0.00	--	--	0.004	0.006
1,1-Dichloroethene	30	0	30	0.00	--	--	0.004	0.006
1,2,4-Trichlorobenzene	88	0	88	0.00	--	--	0.33	3.5
1,2-Dichlorobenzene	88	0	88	0.00	--	--	0.33	3.5
1,2-Dichloroethane	30	0	30	0.00	--	--	0.004	0.006
1,2-Dichloroethene (total)	30	0	30	0.00	--	--	0.004	0.006
1,2-Dichloropropane	30	0	30	0.00	--	--	0.004	0.006
1,3-Dichlorobenzene	88	0	88	0.00	--	--	0.33	3.5
1,4-Dichlorobenzene	88	0	88	0.00	--	--	0.33	3.5
2,4,5-Trichlorophenol	88	0	88	0.00	--	--	0.83	8.8
2,4,5-Trichlorophenoxyacetic acid	1	0	1	0.00	--	--	0.018	0.018
2,4,6-Trichlorophenol	88	0	88	0.00	--	--	0.33	3.5
2,4-Dichlorophenol	88	0	88	0.00	--	--	0.33	3.5
2,4-Dichlorophenoxyacetic acid	1	0	1	0.00	--	--	0.035	0.035
2,4-Dimethylphenol	88	0	88	0.00	--	--	0.33	3.5
2,4-Dinitrophenol	88	0	88	0.00	--	--	0.83	8.8
2,4-Dinitrotoluene	88	0	88	0.00	--	--	0.33	3.5
2,6-Dinitrotoluene	88	0	88	0.00	--	--	0.33	3.5
2-[2,4,5-Trichlorophenoxy]propionic acid	1	0	1	0.00	--	--	0.018	0.018
2-Butanone	30	0	30	0.00	--	--	0.009	0.011
2-Chloronaphthalene	88	0	88	0.00	--	--	0.33	3.5
2-Chlorophenol	88	0	88	0.00	--	--	0.33	3.5
2-Hexanone	30	0	30	0.00	--	--	0.009	0.011
2-Methylnaphthalene	88	0	88	0.00	--	--	0.33	3.5
2-Methylphenol [cresol, o-]	88	0	88	0.00	--	--	0.33	3.5
2-Nitroaniline	88	0	88	0.00	--	--	0.83	8.8
2-Nitrophenol	88	0	88	0.00	--	--	0.33	3.5

Table 5-8. Summary of Waste Site Soil Data Used for 100-B/C Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
2-secButyl-4,6-dinitrophenol[DNBP]	1	0	1	0.00	--	--	0.018	0.018
3,3'-Dichlorobenzidine	88	0	88	0.00	--	--	0.33	3.5
3+4 Methylphenol [cresol, m+p]	88	0	88	0.00	--	--	0.33	3.5
3-Nitroaniline	88	0	88	0.00	--	--	0.83	8.8
4,6-Dinitro-2-methylphenol	88	0	88	0.00	--	--	0.83	8.8
4-[2,4-Dichlorophenoxy]butanoic acid	1	0	1	0.00	--	--	0.18	0.18
4-Bromophenylphenyl ether	88	0	88	0.00	--	--	0.33	3.5
4-Chloro-3-methylphenol	88	0	88	0.00	--	--	0.33	3.5
4-Chloroaniline	88	0	88	0.00	--	--	0.33	3.5
4-Chlorophenylphenyl ether	88	0	88	0.00	--	--	0.33	3.5
4-Nitroaniline	88	0	88	0.00	--	--	0.83	8.8
4-Nitrophenol	88	0	88	0.00	--	--	0.83	8.8
Acenaphthene	88	0	88	0.00	--	--	0.33	3.5
Acenaphthylene	88	0	88	0.00	--	--	0.33	3.5
Acetone	30	1	29	0.03	0.0032	0.0032	0.009	0.011
Aldrin	48	0	48	0.00	--	--	0.0017	0.017
Alpha-BHC	48	0	48	0.00	--	--	0.0017	0.017
alpha-Chlordane	48	0	48	0.00	--	--	0.0017	0.017
Anthracene	88	2	86	0.02	0.022	0.047	0.33	3.5
Aroclor-1016	91	0	91	0.00	--	--	0.013	0.76
Aroclor-1221	91	0	91	0.00	--	--	0.013	0.76
Aroclor-1232	91	0	91	0.00	--	--	0.013	0.76
Aroclor-1242	91	0	91	0.00	--	--	0.013	0.76
Aroclor-1248	91	0	91	0.00	--	--	0.013	0.76
Aroclor-1254	91	18	73	0.20	0.0085	0.54	0.013	0.76
Aroclor-1260	91	2	89	0.02	0.011	0.024	0.013	0.76
Benzene	30	0	30	0.00	--	--	0.004	0.006
Benzo[a]anthracene	88	11	77	0.13	0.018	0.29	0.33	3.5
Benzo[a]pyrene	88	9	79	0.10	0.023	0.18	0.33	3.5
Benzo[b]fluoranthene	88	9	79	0.10	0.028	0.22	0.33	3.5
Benzo[ghi]perylene	88	8	80	0.09	0.017	0.11	0.33	3.5

Table 5-8. Summary of Waste Site Soil Data Used for 100-B/C Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Benzo[k]fluoranthene	88	10	78	0.11	0.019	0.18	0.33	3.5
beta-1,2,3,4,5,6-Hexachlorocyclohexane	48	1	47	0.02	0.0021	0.0021	0.0017	0.017
Bis[2-chloro-1-methylethyl]ether	88	0	88	0.00	--	--	0.33	3.5
Bis[2-Chloroethoxy]methane	88	0	88	0.00	--	--	0.33	3.5
Bis[2-chloroethyl] ether	88	0	88	0.00	--	--	0.33	3.5
Bis[2-ethylhexyl] phthalate	88	63	25	0.72	0.017	3.1	0.34	3.5
Bromodichloromethane	30	0	30	0.00	--	--	0.004	0.006
Bromoform	30	0	30	0.00	--	--	0.004	0.006
Bromomethane	30	0	30	0.00	--	--	0.009	0.011
Butylbenzylphthalate	88	2	86	0.02	0.017	0.028	0.33	3.5
Carbazole	88	3	85	0.03	0.02	0.028	0.33	3.5
Carbon disulfide	30	0	30	0.00	--	--	0.004	0.006
Carbon tetrachloride	30	0	30	0.00	--	--	0.004	0.006
Chlorobenzene	30	0	30	0.00	--	--	0.004	0.006
Chloroethane	30	0	30	0.00	--	--	0.009	0.011
Chloroform	30	0	30	0.00	--	--	0.004	0.006
Chloromethane	30	0	30	0.00	--	--	0.009	0.011
Chrysene	88	13	75	0.15	0.019	0.34	0.33	3.5
cis-1,2-Dichloroethylene	22	0	22	0.00	--	--	0.004	0.006
cis-1,3-Dichloropropene	30	0	30	0.00	--	--	0.004	0.006
Dalapon	1	0	1	0.00	--	--	0.18	0.18
Delta-BHC	48	0	48	0.00	--	--	0.0017	0.017
Dibenz[a,h]anthracene	88	2	86	0.02	0.018	0.061	0.33	3.5
Dibenzofuran	88	0	88	0.00	--	--	0.33	3.5
Dibromochloromethane	30	0	30	0.00	--	--	0.004	0.006
Dicamba	1	0	1	0.00	--	--	0.071	0.071
Dichlorodiphenyldichloroethane	48	0	48	0.00	--	--	0.0033	0.034
Dichlorodiphenyldichloroethylene	48	1	47	0.02	0.016	0.016	0.0033	0.034
Dichlorodiphenyltrichloroethane	48	5	43	0.10	0.0039	0.027	0.0033	0.034
Dichloroprop	1	0	1	0.00	--	--	0.18	0.18
Dieldrin	48	2	46	0.04	0.0043	0.0046	0.0017	0.017

Table 5-8. Summary of Waste Site Soil Data Used for 100-B/C Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Diethylphthalate	88	0	88	0.00	--	--	0.33	3.5
Dimethyl phthalate	88	0	88	0.00	--	--	0.33	3.5
Di-n-butylphthalate	88	31	57	0.35	0.017	0.096	0.33	3.5
Di-n-octylphthalate	88	1	87	0.01	0.028	0.028	0.33	3.5
Endosulfan I	48	0	48	0.00	--	--	0.0017	0.017
Endosulfan II	48	0	48	0.00	--	--	0.0033	0.034
Endosulfan sulfate	48	0	48	0.00	--	--	0.0033	0.034
Endrin	48	0	48	0.00	--	--	0.0033	0.034
Endrin aldehyde	48	1	47	0.02	0.007	0.007	0.0033	0.034
Endrin ketone	48	0	48	0.00	--	--	0.0033	0.034
Ethylbenzene	30	0	30	0.00	--	--	0.004	0.006
Fluoranthene	88	17	71	0.19	0.019	0.69	0.33	3.5
Fluorene	88	0	88	0.00	--	--	0.33	3.5
Gamma-BHC (lindane)	48	0	48	0.00	--	--	0.0017	0.017
gamma-Chlordane	48	1	47	0.02	0.024	0.024	0.0017	0.017
Heptachlor	48	0	48	0.00	--	--	0.0017	0.017
Heptachlor epoxide	48	0	48	0.00	--	--	0.0017	0.017
Hexachlorobenzene	88	0	88	0.00	--	--	0.33	3.5
Hexachlorobutadiene	88	0	88	0.00	--	--	0.33	3.5
Hexachlorocyclopentadiene	88	0	88	0.00	--	--	0.33	3.5
Hexachloroethane	88	0	88	0.00	--	--	0.33	3.5
Indeno[1,2,3-cd]pyrene	88	6	82	0.07	0.019	0.11	0.33	3.5
Isophorone	88	0	88	0.00	--	--	0.33	3.5
Methoxychlor	48	0	48	0.00	--	--	0.017	0.17
Methyl isobutyl ketone	30	0	30	0.00	--	--	0.009	0.011
Methylenechloride	30	7	23	0.23	0.0038	0.016	0.005	0.024
Naphthalene	88	0	88	0.00	--	--	0.33	3.5
Nitrobenzene	88	0	88	0.00	--	--	0.33	3.5
N-Nitroso-di-n-dipropylamine	88	0	88	0.00	--	--	0.33	3.5
N-Nitrosodiphenylamine	88	0	88	0.00	--	--	0.33	3.5
Pentachlorophenol	88	1	87	0.01	0.15	0.15	0.83	8.8

Table 5-8. Summary of Waste Site Soil Data Used for 100-B/C Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Phenanthrene	88	10	78	0.11	0.021	0.34	0.33	3.5
Phenol	88	4	84	0.05	0.017	0.023	0.33	3.5
Pyrene	88	18	70	0.20	0.017	0.54	0.33	3.5
Styrene	30	0	30	0.00	--	--	0.004	0.006
Tetrachloroethene	30	0	30	0.00	--	--	0.004	0.006
Toluene	30	7	23	0.23	0.001	0.0070	0.004	0.006
Toxaphene	48	0	48	0.00	--	--	0.17	1.7
trans-1,2-Dichloroethylene	22	0	22	0.00	--	--	0.004	0.006
trans-1,3-Dichloropropene	30	0	30	0.00	--	--	0.004	0.006
Trichloroethene	30	0	30	0.00	--	--	0.004	0.006
Vinyl chloride	30	0	30	0.00	--	--	0.009	0.011
Xylenes (total)	30	0	30	0.00	--	--	0.004	0.006
Total petroleum hydrocarbons	52	14	38	0.27	7.8	39	35.2	134
Radionuclides (pCi/g)								
Actinium-228	3	1	2	0.33	18700	18700	-230	47500
Americium-241	331	21	310	0.06	0.0336	0.642	-0.099	0.43
Antimony-125	2	0	2	0.00	--	--	0.092	0.11
Carbon-14	19	0	19	0.00	--	--	-1.76	1.56
Cesium-134	4	0	4	0.00	--	--	0.057	0.14
Cesium-137	331	161	170	0.49	0.0198	6.39	-0.00191	0.44
Cobalt-60	331	22	309	0.07	0.02	0.456	-0.0677	0.17
Europium-152	331	85	246	0.26	0.024	4.43	-0.0125	0.822
Europium-154	331	7	324	0.02	0.177	0.382	-0.0713	0.473
Europium-155	331	0	331	0.00	--	--	0.000825	0.25
Gross alpha	42	25	17	0.60	3.39	9	0.735	5.24
Gross beta	42	42	0	1.00	11.4	33.7	--	--
Nickel-63	135	24	111	0.18	2.85	78.9	-3.21	5.33
Plutonium-238	243	2	241	0.01	0.044	0.367	-0.068	0.081
Plutonium-239/240	243	37	206	0.15	0.0234	0.528	-0.027	0.134
Potassium-40	312	311	1	1.00	5.83	16.4	0.93	0.93
Radium-224	13	13	0	1.00	0.488	0.823	--	--

Table 5-8. Summary of Waste Site Soil Data Used for 100-B/C Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Radium-226	312	308	4	0.99	0.222	1.34	0.096	1.24
Radium-228	309	293	16	0.95	0.334	1.71	0.21	0.82
Silver-108 metastable	43	0	43	0.00	--	--	-0.0583	0.089
Strontium-90	248	32	216	0.13	0.127	3.77	-0.166	0.86
Technetium-99	1	0	1	0.00	--	--	0.092	0.092
Thorium-228	296	294	2	0.99	0.305	1.93	0.057	0.061
Thorium-232	296	280	16	0.95	0.334	1.71	0.21	0.82
Thorium-234	3	1	2	0.33	1.1	1.1	0.0197	0.283
Tin-126	4	0	4	0.00	--	--	0.07	0.52
Tritium	31	0	31	0.00	--	--	-0.059	0.159
Uranium-233/234	265	260	5	0.98	0.141	1.54	0.058	0.229
Uranium-235	331	33	298	0.10	0.0208	0.088	-0.0888	0.41
Uranium-238	265	259	6	0.98	0.165	1.49	0	0.314

-- = not applicable
BHC = benzene hexachloride

Table 5-9. Summary of Waste Site Soil Data Used for 100-K Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (4 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Arsenic	19	19	0	1.00	1	6.7	--	--
Barium	19	19	0	1.00	40.1	100	--	--
Cadmium	19	11	8	0.58	0.04	0.64	0.03	0.16
Calculated total uranium	66	66	0	1.00	0.98	4.29	--	--
Chromium	30	30	0	1.00	3.8	30	--	--
Hexavalent chromium	96	39	57	0.41	0.216	1.4	0.2	0.431
Lead	22	22	0	1.00	2.5	63.2	--	--
Mercury	19	15	4	0.79	0.06	17.5	0.02	0.02
Selenium	4	0	4	0.00	--	--	0.35	0.38
Silver	4	0	4	0.00	--	--	0.08	0.08
Organics (mg/kg)								
1,2,4-Trichlorobenzene	1	0	1	0.00	--	--	0.36	0.36
1,2-Dichlorobenzene	1	0	1	0.00	--	--	0.36	0.36
1,3-Dichlorobenzene	1	0	1	0.00	--	--	0.36	0.36
1,4-Dichlorobenzene	1	0	1	0.00	--	--	0.36	0.36
2,4,5-Trichlorophenol	1	0	1	0.00	--	--	0.9	0.9
2,4,6-Trichlorophenol	1	0	1	0.00	--	--	0.36	0.36
2,4-Dichlorophenol	1	0	1	0.00	--	--	0.36	0.36
2,4-Dimethylphenol	1	0	1	0.00	--	--	0.36	0.36
2,4-Dinitrophenol	1	0	1	0.00	--	--	0.9	0.9
2,4-Dinitrotoluene	1	0	1	0.00	--	--	0.36	0.36
2,6-Dinitrotoluene	1	0	1	0.00	--	--	0.36	0.36
2-Chloronaphthalene	1	0	1	0.00	--	--	0.36	0.36
2-Chlorophenol	1	0	1	0.00	--	--	0.36	0.36
2-Methylnaphthalene	1	0	1	0.00	--	--	0.36	0.36
2-Methylphenol [cresol, o-]	1	0	1	0.00	--	--	0.36	0.36
2-Nitroaniline	1	0	1	0.00	--	--	0.9	0.9
2-Nitrophenol	1	0	1	0.00	--	--	0.36	0.36
3,3'-Dichlorobenzidine	1	0	1	0.00	--	--	0.36	0.36
3+4 Methylphenol [cresol, m+p]	1	0	1	0.00	--	--	0.36	0.36

Table 5-9. Summary of Waste Site Soil Data Used for 100-K Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (4 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
3-Nitroaniline	1	0	1	0.00	--	--	0.9	0.9
4,6-Dinitro-2-methylphenol	1	0	1	0.00	--	--	0.9	0.9
4-Bromophenylphenyl ether	1	0	1	0.00	--	--	0.36	0.36
4-Chloro-3-methylphenol	1	0	1	0.00	--	--	0.36	0.36
4-Chloroaniline	1	0	1	0.00	--	--	0.36	0.36
4-Chlorophenylphenyl ether	1	0	1	0.00	--	--	0.36	0.36
4-Nitroaniline	1	0	1	0.00	--	--	0.9	0.9
4-Nitrophenol	1	0	1	0.00	--	--	0.9	0.9
Acenaphthene	1	0	1	0.00	--	--	0.36	0.36
Acenaphthylene	1	0	1	0.00	--	--	0.36	0.36
Anthracene	1	0	1	0.00	--	--	0.36	0.36
Aroclor-1016	3	0	3	0.00	--	--	0.014	0.015
Aroclor-1221	3	0	3	0.00	--	--	0.014	0.015
Aroclor-1232	3	0	3	0.00	--	--	0.014	0.015
Aroclor-1242	3	0	3	0.00	--	--	0.014	0.015
Aroclor-1248	3	0	3	0.00	--	--	0.014	0.015
Aroclor-1254	3	0	3	0.00	--	--	0.015	0.047
Aroclor-1260	3	0	3	0.00	--	--	0.014	0.015
Benzo[a]anthracene	1	1	0	1.00	0.103	0.103	--	--
Benzo[a]pyrene	1	1	0	1.00	0.051	0.051	--	--
Benzo[b]fluoranthene	1	1	0	1.00	0.075	0.075	--	--
Benzo[ghi]perylene	1	1	0	1.00	0.033	0.033	--	--
Benzo[k]fluoranthene	1	1	0	1.00	0.078	0.078	--	--
Bis[2-chloro-1-methylethyl]ether	1	0	1	0.00	--	--	0.36	0.36
Bis[2-Chloroethoxy]methane	1	0	1	0.00	--	--	0.36	0.36
Bis[2-chloroethyl] ether	1	0	1	0.00	--	--	0.36	0.36
Bis[2-ethylhexyl] phthalate	1	1	0	1.00	0.069	0.069	--	--
Butylbenzylphthalate	1	0	1	0.00	--	--	0.36	0.36
Carbazole	1	0	1	0.00	--	--	0.36	0.36
Chrysene	1	1	0	1.00	0.15	0.15	--	--
Dibenz[a,h]anthracene	1	0	1	0.00	--	--	0.36	0.36

Table 5-9. Summary of Waste Site Soil Data Used for 100-K Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (4 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Dibenzofuran	1	0	1	0.00	--	--	0.36	0.36
Diethylphthalate	1	0	1	0.00	--	--	0.36	0.36
Dimethyl phthalate	1	0	1	0.00	--	--	0.36	0.36
Di-n-butylphthalate	1	0	1	0.00	--	--	0.36	0.36
Di-n-octylphthalate	1	0	1	0.00	--	--	0.36	0.36
Ethylene glycol	2	1	1	0.50	59	59	10	10
Fluoranthene	1	1	0	1.00	0.22	0.22	--	--
Fluorene	1	0	1	0.00	--	--	0.36	0.36
Hexachlorobenzene	1	0	1	0.00	--	--	0.36	0.36
Hexachlorobutadiene	1	0	1	0.00	--	--	0.36	0.36
Hexachlorocyclopentadiene	1	0	1	0.00	--	--	0.36	0.36
Hexachloroethane	1	0	1	0.00	--	--	0.36	0.36
Indeno[1,2,3-cd]pyrene	1	1	0	1.00	0.029	0.029	--	--
Isophorone	1	0	1	0.00	--	--	0.36	0.36
Naphthalene	1	0	1	0.00	--	--	0.36	0.36
Nitrobenzene	1	0	1	0.00	--	--	0.36	0.36
N-Nitroso-di-n-dipropylamine	1	0	1	0.00	--	--	0.36	0.36
N-Nitrosodiphenylamine	1	0	1	0.00	--	--	0.36	0.36
Pentachlorophenol	1	0	1	0.00	--	--	0.9	0.9
Phenanthrene	1	1	0	1.00	0.046	0.046	--	--
Phenol	1	0	1	0.00	--	--	0.36	0.36
Pyrene	1	1	0	1.00	0.15	0.15	--	--
Radionuclides (pCi/g)								
Americium-241	118	1	117	0.01	0.532	0.532	-0.073	0.47
Carbon-14	40	1	39	0.03	2.98	2.98	-2.87	1.82
Cesium-137	118	85	33	0.72	0.022	4.69	0.025	0.063
Cobalt-60	118	20	98	0.17	0.038	0.319	0.026	0.11
Europium-152	118	73	45	0.62	0.062	10.4	0.062	0.17
Europium-154	118	17	101	0.14	0.107	0.785	0.089	1.1
Europium-155	118	0	118	0.00	--	--	0.031	0.25
Nickel-63	40	10	30	0.25	4.22	11.7	-12.5	2.5

Table 5-9. Summary of Waste Site Soil Data Used for 100-K Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (4 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Plutonium-238	66	0	66	0.00	--	--	-0.031	0.12
Plutonium-239/240	66	1	65	0.02	0.918	0.918	-0.053	0.243
Potassium-40	118	117	1	0.99	4.58	28.7	1.3	1.3
Radium-226	118	118	0	1.00	0.257	1.02	--	--
Radium-228	118	118	0	1.00	0.22	1.75	--	--
Strontium-90	74	21	53	0.28	0.18	2.74	-0.063	0.331
Thorium-228	118	117	1	0.99	0.191	1.57	0.086	0.086
Thorium-232	118	118	0	1.00	0.22	1.75	--	--
Uranium-233/234	66	66	0	1.00	0.261	1.59	--	--
Uranium-235	118	5	113	0.04	0.029	0.041	0	0.27
Uranium-238	66	66	0	1.00	0.318	1.43	--	--
Anions (mg/kg)								
Sulfate	4	4	0	1.00	4.96	2630	--	--
Physical Properties								
pH measurement	4	4	0	1.00	6.69	8.44	--	--

-- = not applicable

Table 5-10. Summary of Waste Site Soil Data Used for 100-N Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (2 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Antimony	2	0	2	0.00	--	--	2.6	2.7
Arsenic	2	0	2	0.00	--	--	2.8	2.9
Barium	2	2	0	1.00	63.5	81.9	--	--
Beryllium	2	2	0	1.00	0.29	0.32	--	--
Cadmium	2	1	1	0.50	0.53	0.53	0.47	0.47
Chromium	2	2	0	1.00	7.8	9.9	--	--
Copper	2	2	0	1.00	15.1	16.2	--	--
Hexavalent chromium	2	0	2	0.00	--	--	0.41	0.41
Lead	2	2	0	1.00	3.6	4.3	--	--
Manganese	2	2	0	1.00	331	376	--	--
Mercury	22	2	20	0.09	0.02	0.04	0.01	0.02
Nickel	2	2	0	1.00	10.1	12.6	--	--
Selenium	2	0	2	0.00	--	--	5	5.1
Silver	2	0	2	0.00	--	--	0.25	0.26
Thallium	2	0	2	0.00	--	--	5.1	5.2
Vanadium	2	2	0	1.00	50.9	58.3	--	--
Zinc	2	2	0	1.00	41.4	50.9	--	--
Radionuclides (pCi/g)								
Americium-241	20	1	19	0.05	0.18	0.18	-0.13	0.387
Cesium-137	32	16	16	0.50	0.015	1.27	0.009	0.04
Cobalt-60	32	18	14	0.56	0.033	0.796	0.009	0.21
Europium-152	20	0	20	0.00	--	--	0.021	0.12
Europium-154	32	0	32	0.00	--	--	0.029	0.18
Europium-155	32	1	31	0.03	0.039	0.039	0.025	0.13
Gross alpha	3	0	3	0.00	--	--	1.68	2.98
Gross beta	3	2	1	0.67	10	15	3.52	3.52
Nickel-63	20	0	20	0.00	--	--	-4.26	0.856
Plutonium-238	20	0	20	0.00	--	--	-0.091	0.137
Plutonium-239/240	20	0	20	0.00	--	--	-0.114	0.137
Potassium-40	20	20	0	1.00	8.03	13.2	--	--

Table 5-10. Summary of Waste Site Soil Data Used for 100-N Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (2 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Radium-226	20	19	1	0.95	0.308	0.534	0.075	0.075
Radium-228	20	20	0	1.00	0.387	0.793	--	--
Strontium-90	20	3	17	0.15	0.368	1.14	-0.119	0.158
Thorium-228	20	20	0	1.00	0.405	0.868	--	--
Thorium-232	20	20	0	1.00	0.387	0.793	--	--
Tritium	10	1	9	0.10	0.261	0.261	-0.066	0.05
Uranium-235	20	0	20	0.00	--	--	0.045	0.2
Anions (mg/kg)								
Nitrogen in nitrate	2	2	0	1.00	3.39	5.65	--	--
Nitrogen in nitrite	2	0	2	0.00	--	--	0.396	0.396
Nitrogen in nitrite and nitrate	22	12	10	0.55	0.18	6.2	0.16	0.2
Sulfate	2	2	0	1.00	6.6	43.8	--	--
Physical Properties								
pH measurement	2	2	0	1.00	8.6	9	--	--

-- = not applicable

Table 5-11. Summary of Waste Site Soil Data Used for 100-D/100-H Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Antimony	2	0	2	0.00	--	--	0.34	0.35
Arsenic	81	81	0	1.00	0.67	25.7	--	--
Barium	28	28	0	1.00	37.3	110	--	--
Beryllium	2	2	0	1.00	0.66	0.9	--	--
Boron	2	0	2	0.00	--	--	0.63	1.1
Cadmium	12	3	9	0.25	0.07	0.33	0.03	0.07
Calculated total uranium	218	216	2	0.99	0.696	3.17	0.384	0.395
Chromium	101	101	0	1.00	2.8	204	--	--
Cobalt	2	2	0	1.00	6	7.4	--	--
Copper	2	2	0	1.00	13.7	14.7	--	--
Hexavalent chromium	262	40	222	0.15	0.1	1.9	0.03	0.86
Lead	126	126	0	1.00	1.7	94.5	--	--
Lithium	4	4	0	1.00	7.8	12.5	--	--
Manganese	2	2	0	1.00	245	269	--	--
Mercury	109	18	91	0.17	0.017	3.5	0.002	0.021
Molybdenum	2	2	0	1.00	0.18	0.28	--	--
Nickel	2	2	0	1.00	6.8	8.1	--	--
Selenium	8	0	8	0.00	--	--	0.26	0.43
Silver	12	0	12	0.00	--	--	0.05	0.08
Sodium	4	4	0	1.00	289	447	--	--
Uranium (inorganic)	2	2	0	1.00	1.38	1.56	--	--
Vanadium	2	2	0	1.00	49.1	54.5	--	--
Zinc	2	2	0	1.00	35.6	38.1	--	--
Organics (mg/kg)								
1,2,4-Trichlorobenzene	14	0	14	0.00	--	--	0.34	0.38
1,2-Dichlorobenzene	14	0	14	0.00	--	--	0.34	0.38
1,3-Dichlorobenzene	14	0	14	0.00	--	--	0.34	0.38
1,4-Dichlorobenzene	14	0	14	0.00	--	--	0.34	0.38
2,4,5-Trichlorophenol	14	0	14	0.00	--	--	0.86	0.96
2,4,6-Trichlorophenol	14	0	14	0.00	--	--	0.34	0.38

Table 5-11. Summary of Waste Site Soil Data Used for 100-D/100-H Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
2,4-Dichlorophenol	14	0	14	0.00	--	--	0.34	0.38
2,4-Dimethylphenol	14	0	14	0.00	--	--	0.34	0.38
2,4-Dinitrophenol	14	0	14	0.00	--	--	0.86	0.96
2,4-Dinitrotoluene	14	0	14	0.00	--	--	0.34	0.38
2,6-Dinitrotoluene	14	0	14	0.00	--	--	0.34	0.38
2-Chloronaphthalene	14	0	14	0.00	--	--	0.34	0.38
2-Chlorophenol	14	0	14	0.00	--	--	0.34	0.38
2-Methylnaphthalene	14	0	14	0.00	--	--	0.34	0.38
2-Methylphenol [cresol, o-]	14	0	14	0.00	--	--	0.34	0.38
2-Nitroaniline	14	0	14	0.00	--	--	0.86	0.96
2-Nitrophenol	14	0	14	0.00	--	--	0.34	0.38
3,3'-Dichlorobenzidine	14	0	14	0.00	--	--	0.34	0.38
3+4 Methylphenol [cresol, m+p]	6	0	6	0.00	--	--	0.34	0.35
3-Nitroaniline	14	0	14	0.00	--	--	0.86	0.96
4,6-Dinitro-2-methylphenol	14	0	14	0.00	--	--	0.86	0.96
4-Bromophenylphenyl ether	14	0	14	0.00	--	--	0.34	0.38
4-Chloro-3-methylphenol	14	0	14	0.00	--	--	0.34	0.38
4-Chloroaniline	14	0	14	0.00	--	--	0.34	0.38
4-Chlorophenylphenyl ether	14	0	14	0.00	--	--	0.34	0.38
4-Methylphenol [cresol, p-]	8	0	8	0.00	--	--	0.34	0.38
4-Nitroaniline	14	0	14	0.00	--	--	0.86	0.96
4-Nitrophenol	14	0	14	0.00	--	--	0.86	0.96
Acenaphthene	14	0	14	0.00	--	--	0.34	0.38
Acenaphthylene	14	0	14	0.00	--	--	0.34	0.38
Aldrin	22	0	22	0.00	--	--	0.0017	0.002
Alpha-BHC	22	0	22	0.00	--	--	0.0017	0.002
alpha-Chlordane	2	0	2	0.00	--	--	0.0017	0.0017
Anthracene	14	0	14	0.00	--	--	0.34	0.38
Aroclor-1016	144	0	144	0.00	--	--	0.014	0.17
Aroclor-1221	156	0	156	0.00	--	--	0.014	0.34
Aroclor-1232	156	0	156	0.00	--	--	0.014	0.17

Table 5-11. Summary of Waste Site Soil Data Used for 100-D/100-H Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Aroclor-1242	144	0	144	0.00	--	--	0.014	0.17
Aroclor-1248	156	0	156	0.00	--	--	0.014	0.17
Aroclor-1254	156	5	151	0.03	0.071	0.17	0.014	0.17
Aroclor-1260	156	18	138	0.12	0.029	0.35	0.014	0.04
Benzo[a]anthracene	18	3	15	0.17	0.018	0.066	0.0089	0.38
Benzo[a]pyrene	18	2	16	0.11	0.021	0.03	0.015	0.38
Benzo[b]fluoranthene	18	2	16	0.11	0.022	0.036	0.012	0.38
Benzo[ghi]perylene	14	0	14	0.00	--	--	0.34	0.38
Benzo[k]fluoranthene	18	2	16	0.11	0.010	0.025	0.011	0.38
beta-1,2,3,4,5,6-Hexachlorocyclohexane	22	0	22	0.00	--	--	0.0017	0.002
Bis[2-chloro-1-methylethyl]ether	14	0	14	0.00	--	--	0.34	0.38
Bis[2-Chloroethoxy]methane	14	0	14	0.00	--	--	0.34	0.38
Bis[2-chloroethyl] ether	14	0	14	0.00	--	--	0.34	0.38
Bis[2-ethylhexyl] phthalate	30	7	23	0.23	0.02	0.1	0.33	0.4
Butylbenzylphthalate	14	0	14	0.00	--	--	0.34	0.38
Carbazole	14	0	14	0.00	--	--	0.34	0.38
Chlordane	20	0	20	0.00	--	--	0.017	0.02
Chrysene	18	1	17	0.06	0.055	0.055	0.093	0.38
Co-elution of Aroclor-1242 and Aroclor-1016	12	0	12	0.00	--	--	0.033	0.04
Delta-BHC	22	0	22	0.00	--	--	0.0017	0.002
Dibenz[a,h]anthracene	18	0	18	0.00	--	--	0.019	0.38
Dibenzofuran	14	0	14	0.00	--	--	0.34	0.38
Dichlorodiphenyldichloroethane	22	0	22	0.00	--	--	0.0017	0.0035
Dichlorodiphenyldichloroethylene	22	0	22	0.00	--	--	0.0017	0.005
Dichlorodiphenyltrichloroethane	22	0	22	0.00	--	--	0.0017	0.024
Dieldrin	22	0	22	0.00	--	--	0.0017	0.002
Diethylphthalate	14	0	14	0.00	--	--	0.34	0.38
Dimethyl phthalate	14	0	14	0.00	--	--	0.34	0.38
Di-n-butylphthalate	14	6	8	0.43	0.025	0.11	0.34	0.36
Di-n-octylphthalate	14	0	14	0.00	--	--	0.34	0.38

Table 5-11. Summary of Waste Site Soil Data Used for 100-D/100-H Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Endosulfan I	22	0	22	0.00	--	--	0.0017	0.0049
Endosulfan II	22	0	22	0.00	--	--	0.0017	0.0035
Endosulfan sulfate	22	0	22	0.00	--	--	0.0017	0.0035
Endrin	22	0	22	0.00	--	--	0.0017	0.0059
Endrin aldehyde	22	0	22	0.00	--	--	0.0017	0.0061
Endrin ketone	2	0	2	0.00	--	--	0.0035	0.0035
Fluoranthene	14	3	11	0.21	0.022	0.11	0.34	0.38
Fluorene	14	0	14	0.00	--	--	0.34	0.38
Gamma-BHC (lindane)	22	0	22	0.00	--	--	0.0017	0.002
gamma-Chlordane	2	0	2	0.00	--	--	0.0017	0.0017
Heptachlor	22	0	22	0.00	--	--	0.0017	0.002
Heptachlor epoxide	22	0	22	0.00	--	--	0.0017	0.002
Hexachlorobenzene	14	0	14	0.00	--	--	0.34	0.38
Indeno[1,2,3-cd]pyrene	18	0	18	0.00	--	--	0.027	0.38
Isophorone	14	0	14	0.00	--	--	0.34	0.38
Methoxychlor	22	0	22	0.00	--	--	0.0033	0.017
Naphthalene	14	0	14	0.00	--	--	0.34	0.38
Nitrobenzene	14	0	14	0.00	--	--	0.34	0.38
N-Nitroso-di-n-dipropylamine	14	0	14	0.00	--	--	0.34	0.38
N-Nitrosodiphenylamine	14	0	14	0.00	--	--	0.34	0.38
Pentachlorophenol	14	0	14	0.00	--	--	0.86	0.96
Phenanthrene	14	1	13	0.07	0.02	0.02	0.34	0.38
Phenol	14	0	14	0.00	--	--	0.34	0.38
Pyrene	14	3	11	0.21	0.02	0.1	0.34	0.38
Toxaphene	22	0	22	0.00	--	--	0.067	0.17
Radionuclides (pCi/g)								
Americium-241	252	12	240	0.05	0.013	0.205	-0.054	0.94
Barium-133	34	0	34	0.00	--	--	0.01	0.099
Carbon-14	30	0	30	0.00	--	--	-2.29	4.84
Cesium-134	3	1	2	0.33	0.018	0.018	0.035	0.054
Cesium-137	252	135	117	0.54	0.011	10	-0.00155	0.11

Table 5-11. Summary of Waste Site Soil Data Used for 100-D/100-H Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Cobalt-60	252	19	233	0.08	0.024	0.122	-0.00184	0.14
Europium-152	252	89	163	0.35	0.022	2.16	0	0.28
Europium-154	252	7	245	0.03	0.064	0.234	-0.014	0.46
Europium-155	252	0	252	0.00	--	--	-0.00954	0.36
Gross alpha	2	2	0	1.00	4.32	7.25	--	--
Gross beta	5	5	0	1.00	11.1	14.7	--	--
Manganese-54	1	1	0	1.00	0.007	0.007	--	--
Nickel-63	108	5	103	0.05	2.6	7.8	-1.35	2.38
Plutonium-238	234	5	229	0.02	0.0275	0.359	-0.103	0.054
Plutonium-239/240	234	21	213	0.09	0.023	0.724	-0.042	0.206
Potassium-40	252	252	0	1.00	6.46	17.2	--	--
Radium-224	15	15	0	1.00	0.413	0.596	--	--
Radium-226	251	249	2	0.99	0.235	0.804	0.064	0.066
Radium-228	251	246	5	0.98	0.41	1.08	0.13	0.75
Strontium-90	234	29	205	0.12	0.112	2.7	-0.088	0.17
Technetium-99	48	3	45	0.06	0.598	2.42	-0.327	0.788
Thorium-228	236	234	2	0.99	0.357	1.1	0.28	0.29
Thorium-232	236	231	5	0.98	0.412	1.08	0.13	0.75
Uranium-233/234	218	217	1	1.00	0.226	1.38	0.276	0.276
Uranium-235	244	25	219	0.10	0.013	0.184	0	0.19
Uranium-238	218	216	2	0.99	0.229	1.05	0.118	0.129
Anions (mg/kg)								
Bromide	2	0	2	0.00	--	--	1.28	1.3
Chloride	2	0	2	0.00	--	--	1.28	1.3
Fluoride	2	0	2	0.00	--	--	1.28	1.3
Nitrogen in nitrate	2	2	0	1.00	0.51	0.56	--	--
Nitrogen in nitrite	2	0	2	0.00	--	--	0.39	0.40
Nitrogen in nitrite and nitrate	2	2	0	1.00	0.55	0.715	--	--
Phosphate	2	0	2	0.00	--	--	1.28	1.3
Sulfate	2	2	0	1.00	2.08	4.32	--	--

-- = not applicable
BHC = benzene hexachloride

Table 5-12. Summary of Waste Site Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Aluminum	21	21	0	1.00	3,770	7,840	--	--
Antimony	21	1	20	0.05	0.263	0.263	0.25	4.5
Arsenic	84	82	2	0.98	1.4	17.3	2	2
Barium	62	62	0	1.00	27.5	508	--	--
Beryllium	21	18	3	0.86	0.18	0.55	0.009	0.25
Boron	15	15	0	1.00	0.484	23.5	--	--
Cadmium	54	31	23	0.57	0.03	0.83	0.027	0.31
Calcium	21	21	0	1.00	2540	11,000	--	--
Calculated total uranium	20	19	1	0.95	0.586	2.4	0.491	0.491
Chromium	87	87	0	1.00	3.3	67.2	--	--
Cobalt	27	27	0	1.00	4.1	8.7	--	--
Copper	21	19	2	0.90	9.7	18	11.1	12.3
Hexavalent chromium	180	37	143	0.21	0.23	2.1	0.207	0.5
Iron	21	21	0	1.00	9,570	22,400	--	--
Lead	69	63	6	0.91	2.4	214	3.6	4.5
Magnesium	21	21	0	1.00	2,770	4,900	--	--
Manganese	33	33	0	1.00	185	330	--	--
Mercury	54	12	42	0.22	0.02	0.38	0.01	0.05
Molybdenum	15	13	2	0.87	0.17	0.51	0.2	0.229
Nickel	21	21	0	1.00	7.9	11.4	--	--
Potassium	21	21	0	1.00	626	1,380	--	--
Selenium	50	4	46	0.08	0.42	0.66	0.24	1.9
Silicon	15	15	0	1.00	115	1,230	--	--
Silver	54	1	53	0.02	0.52	0.52	0.08	0.71
Sodium	21	19	2	0.90	84.4	888	204	215
Thallium	2	1	1	0.50	0.44	0.44	0.31	0.31
Vanadium	21	21	0	1.00	22.7	59.7	--	--
Zinc	33	33	0	1.00	24.2	77.7	--	--

Table 5-12. Summary of Waste Site Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Organics (mg/kg)								
1,1,1-Trichloroethane	5	0	5	0.00	--	--	0.005	0.006
1,1,2,2-Tetrachloroethane	5	0	5	0.00	--	--	0.005	0.006
1,1,2-Trichloroethane	5	0	5	0.00	--	--	0.005	0.006
1,1-Dichloroethane	5	0	5	0.00	--	--	0.005	0.006
1,1-Dichloroethene	5	0	5	0.00	--	--	0.005	0.006
1,2,4-Trichlorobenzene	30	0	30	0.00	--	--	0.34	4.2
1,2-Dichlorobenzene	30	0	30	0.00	--	--	0.34	4.2
1,2-Dichloroethane	5	0	5	0.00	--	--	0.005	0.006
1,2-Dichloroethene (total)	5	0	5	0.00	--	--	0.005	0.006
1,2-Dichloropropane	5	0	5	0.00	--	--	0.005	0.006
1,3-Dichlorobenzene	30	0	30	0.00	--	--	0.34	4.2
1,4-Dichlorobenzene	30	0	30	0.00	--	--	0.34	4.2
2,4,5-Trichlorophenol	30	0	30	0.00	--	--	0.83	11
2,4,5-Trichlorophenoxyacetic acid	14	0	14	0.00	--	--	0.017	0.95
2,4,6-Trichlorophenol	30	0	30	0.00	--	--	0.34	4.2
2,4-Dichlorophenol	30	0	30	0.00	--	--	0.34	4.2
2,4-Dichlorophenoxyacetic acid	14	0	14	0.00	--	--	0.033	1.9
2,4-Dimethylphenol	30	0	30	0.00	--	--	0.34	4.2
2,4-Dinitrophenol	30	0	30	0.00	--	--	0.83	11
2,4-Dinitrotoluene	30	0	30	0.00	--	--	0.34	4.2
2,6-Dinitrotoluene	30	0	30	0.00	--	--	0.34	4.2
2-[2,4,5-Trichlorophenoxy]propionic acid	14	0	14	0.00	--	--	0.017	0.95
2-Butanone	5	0	5	0.00	--	--	0.01	0.013
2-Chloronaphthalene	30	0	30	0.00	--	--	0.34	4.2
2-Chlorophenol	30	0	30	0.00	--	--	0.34	4.2
2-Hexanone	5	0	5	0.00	--	--	0.01	0.013
2-Methylnaphthalene	30	0	30	0.00	--	--	0.34	4.2
2-Methylphenol [cresol, o-]	30	0	30	0.00	--	--	0.34	4.2
2-Nitroaniline	30	0	30	0.00	--	--	0.83	11
2-Nitrophenol	30	0	30	0.00	--	--	0.34	4.2

Table 5-12. Summary of Waste Site Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
2-secButyl-4,6-dinitrophenol[DNBP]	14	0	14	0.00	--	--	0.017	0.95
3,3'-Dichlorobenzidine	30	0	30	0.00	--	--	0.34	4.2
3+4 Methylphenol [cresol, m+p]	28	0	28	0.00	--	--	0.34	4.2
3-Nitroaniline	30	0	30	0.00	--	--	0.83	11
4,6-Dinitro-2-methylphenol	30	0	30	0.00	--	--	0.83	11
4-[2,4-Dichlorophenoxy]butanoic acid	14	0	14	0.00	--	--	0.17	9.5
4-Bromophenylphenyl ether	30	0	30	0.00	--	--	0.34	4.2
4-Chloro-3-methylphenol	30	0	30	0.00	--	--	0.34	4.2
4-Chloroaniline	30	0	30	0.00	--	--	0.34	4.2
4-Chlorophenylphenyl ether	30	0	30	0.00	--	--	0.34	4.2
4-Methylphenol [cresol, p-]	2	0	2	0.00	--	--	1.7	3.4
4-Nitroaniline	30	0	30	0.00	--	--	0.83	11
4-Nitrophenol	30	0	30	0.00	--	--	0.83	11
Acenaphthene	37	2	35	0.05	0.15	1.2	0.101	4.2
Acenaphthylene	37	1	36	0.03	0.038	0.038	0.101	4.2
Acetone	5	0	5	0.00	--	--	0.01	0.013
Aldrin	13	0	13	0.00	--	--	0.0017	0.095
Alpha-BHC	13	0	13	0.00	--	--	0.0017	0.095
alpha-Chlordane	13	0	13	0.00	--	--	0.0017	0.095
Anthracene	37	1	36	0.03	0.047	0.047	0.00505	4.2
Aroclor-1016	59	0	59	0.00	--	--	0.013	0.85
Aroclor-1221	59	0	59	0.00	--	--	0.013	0.85
Aroclor-1232	59	0	59	0.00	--	--	0.013	0.85
Aroclor-1242	59	0	59	0.00	--	--	0.013	0.85
Aroclor-1248	59	1	58	0.02	0.17	0.17	0.013	0.85
Aroclor-1254	59	9	50	0.15	0.0094	1.3	0.013	0.77
Aroclor-1260	59	18	41	0.31	0.0064	1.1	0.013	0.85
Benzene	5	2	3	0.40	0.002	0.002	0.006	0.006
Benzo[a]anthracene	37	3	34	0.08	0.004	0.79	0.00507	4.2
Benzo[a]pyrene	37	4	33	0.11	0.0076	1.7	0.00509	4.2
Benzo[b]fluoranthene	37	7	30	0.19	0.0042	6.8	0.00511	4.2

Table 5-12. Summary of Waste Site Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Benzo[ghi]perylene	37	4	33	0.11	0.0068	1.7	0.00509	4.2
Benzo[k]fluoranthene	37	3	34	0.08	0.009	1.6	0.00507	4.2
beta-1,2,3,4,5,6-Hexachlorocyclohexane	13	0	13	0.00	--	--	0.0017	0.095
Bis[2-chloro-1-methylethyl]ether	30	0	30	0.00	--	--	0.34	4.2
Bis[2-Chloroethoxy]methane	30	0	30	0.00	--	--	0.34	4.2
Bis[2-chloroethyl] ether	30	0	30	0.00	--	--	0.34	4.2
Bis[2-ethylhexyl] phthalate	30	19	11	0.63	0.0201	2.4	0.36	3.4
Bromodichloromethane	5	0	5	0.00	--	--	0.005	0.006
Bromoform	5	0	5	0.00	--	--	0.005	0.006
Bromomethane	5	0	5	0.00	--	--	0.01	0.013
Butylbenzylphthalate	30	0	30	0.00	--	--	0.34	4.2
Carbazole	30	0	30	0.00	--	--	0.34	4.2
Carbon disulfide	5	0	5	0.00	--	--	0.005	0.006
Carbon tetrachloride	5	0	5	0.00	--	--	0.005	0.006
Chlorobenzene	5	0	5	0.00	--	--	0.005	0.006
Chloroethane	5	0	5	0.00	--	--	0.01	0.013
Chloroform	5	0	5	0.00	--	--	0.005	0.006
Chloromethane	5	0	5	0.00	--	--	0.01	0.013
Chrysene	37	4	33	0.11	0.0034	2	0.00505	4.2
cis-1,3-Dichloropropene	5	0	5	0.00	--	--	0.005	0.006
Dalapon	14	0	14	0.00	--	--	0.17	9.5
Delta-BHC	13	0	13	0.00	--	--	0.0017	0.095
Dibenz[a,h]anthracene	37	2	35	0.05	0.0025	0.24	0.00507	4.2
Dibenzofuran	30	0	30	0.00	--	--	0.34	4.2
Dibromochloromethane	5	0	5	0.00	--	--	0.005	0.006
Dicamba	14	0	14	0.00	--	--	0.067	3.8
Dichlorodiphenyldichloroethane	13	0	13	0.00	--	--	0.0034	0.19
Dichlorodiphenyldichloroethylene	13	0	13	0.00	--	--	0.0034	0.19
Dichlorodiphenyltrichloroethane	13	1	12	0.08	0.0034	0.0034	0.0035	0.19
Dichloroprop	14	0	14	0.00	--	--	0.17	9.5
Dieldrin	13	0	13	0.00	--	--	0.0034	0.19

Table 5-12. Summary of Waste Site Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Diethylphthalate	30	1	29	0.03	0.024	0.024	0.34	4.2
Dimethyl phthalate	30	0	30	0.00	--	--	0.34	4.2
Di-n-butylphthalate	30	6	24	0.20	0.022	16	0.021	4.2
Di-n-octylphthalate	30	0	30	0.00	--	--	0.34	4.2
Endosulfan I	13	0	13	0.00	--	--	0.0017	0.095
Endosulfan II	13	0	13	0.00	--	--	0.0034	0.19
Endosulfan sulfate	13	0	13	0.00	--	--	0.0034	0.19
Endrin	13	0	13	0.00	--	--	0.0034	0.19
Endrin aldehyde	13	0	13	0.00	--	--	0.0034	0.19
Endrin ketone	13	0	13	0.00	--	--	0.0034	0.19
Ethylbenzene	5	0	5	0.00	--	--	0.005	0.006
Fluoranthene	37	5	32	0.14	0.0084	3.5	0.0102	4.2
Fluorene	37	3	34	0.08	0.0034	0.62	0.00507	4.2
Gamma-BHC (lindane)	13	0	13	0.00	--	--	0.0017	0.095
gamma-Chlordane	13	0	13	0.00	--	--	0.0017	0.095
Heptachlor	13	0	13	0.00	--	--	0.0017	0.095
Heptachlor epoxide	13	0	13	0.00	--	--	0.0017	0.095
Hexachlorobenzene	30	0	30	0.00	--	--	0.34	4.2
Hexachlorobutadiene	30	0	30	0.00	--	--	0.34	4.2
Hexachlorocyclopentadiene	30	0	30	0.00	--	--	0.34	4.2
Hexachloroethane	30	0	30	0.00	--	--	0.34	4.2
Indeno[1,2,3-cd]pyrene	37	5	32	0.14	0.0026	2.1	0.00509	4.2
Isophorone	30	0	30	0.00	--	--	0.34	4.2
Methoxychlor	13	0	13	0.00	--	--	0.017	0.95
Methyl isobutyl ketone	5	0	5	0.00	--	--	0.01	0.013
Methylenechloride	5	4	1	0.80	0.009	0.019	0.0067	0.0067
Naphthalene	37	1	36	0.03	0.1	0.1	0.101	4.2
Nitrobenzene	30	0	30	0.00	--	--	0.34	4.2
N-Nitroso-di-n-dipropylamine	30	0	30	0.00	--	--	0.34	4.2
N-Nitrosodiphenylamine	30	0	30	0.00	--	--	0.34	4.2
Pentachlorophenol	30	0	30	0.00	--	--	0.83	11

Table 5-12. Summary of Waste Site Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Phenanthrene	37	3	34	0.08	0.0026	0.2	0.00505	4.2
Phenol	30	1	29	0.03	0.084	0.084	0.34	4.2
Pyrene	37	5	32	0.14	0.011	1.9	0.0101	4.2
Styrene	5	0	5	0.00	--	--	0.005	0.006
Tetrachloroethene	5	0	5	0.00	--	--	0.005	0.006
Toluene	5	1	4	0.20	0.001	0.001	0.005	0.006
Toxaphene	13	0	13	0.00	--	--	0.17	9.5
trans-1,3-Dichloropropene	5	0	5	0.00	--	--	0.005	0.006
Trichloroethene	5	0	5	0.00	--	--	0.005	0.006
Vinyl chloride	5	0	5	0.00	--	--	0.01	0.013
Xylenes (total)	5	0	5	0.00	--	--	0.005	0.006
Total petroleum hydrocarbons	15	10	5	0.67	4.3	158	3.4	38
Radionuclides (pCi/g)								
Americium-241	162	0	162	0.00	--	--	-0.087	0.41
Barium-133	24	0	24	0.00	--	--	0.02	0.063
Carbon-14	116	3	113	0.03	2.14	5.7	-2.5	3.73
Cerium-144	2	0	2	0.00	--	--	0.2	0.2
Cesium-134	2	0	2	0.00	--	--	0.03	0.06
Cesium-137	183	74	109	0.40	0.014	1.5	0.011	0.2
Cobalt-58	2	0	2	0.00	--	--	0.04	0.05
Cobalt-60	179	5	174	0.03	0.068	0.143	-0.0035	0.19
Europium-152	179	43	136	0.24	0.029	4.13	0.0131	0.29
Europium-154	177	2	175	0.01	0.196	0.237	-0.0107	0.39
Europium-155	179	2	177	0.01	0.042	0.094	0.022	0.25
Gross alpha	14	14	0	1.00	4.2	27.9	--	--
Gross beta	14	14	0	1.00	14.6	24.7	--	--
Iron-59	2	0	2	0.00	--	--	0.1	0.1
Manganese-54	2	0	2	0.00	--	--	0.05	0.05
Nickel-59	8	0	8	0.00	--	--	-3.95	5.61
Nickel-63	66	24	42	0.36	1.95	14.6	-2.26	2.27
Niobium-94	2	0	2	0.00	--	--	0.04	0.04

Table 5-12. Summary of Waste Site Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Plutonium-238	19	0	19	0.00	--	--	-0.04	0.04
Plutonium-239/240	19	1	18	0.05	0.032	0.032	0	0.04
Plutonium-241	8	0	8	0.00	--	--	-2.64	5.46
Potassium-40	166	166	0	1.00	7.78	23.8	--	--
Radium-224	4	4	0	1.00	0.701	0.779	--	--
Radium-226	166	157	9	0.95	0.267	0.957	0.041	0.21
Radium-228	166	163	3	0.98	0.353	1.36	0.32	0.72
Ruthenium-103	2	0	2	0.00	--	--	0.04	0.04
Ruthenium-106	2	0	2	0.00	--	--	0.3	0.4
Sodium-22	2	0	2	0.00	--	--	0.05	0.05
Strontium-90	107	17	90	0.16	0.202	4.14	-0.099	0.19
Technetium-99	2	0	2	0.00	--	--	0.11	0.14
Thorium-228	162	161	1	0.99	0.327	1.27	0.081	0.081
Thorium-232	162	159	3	0.98	0.353	1.36	0.32	0.72
Tin-113	2	0	2	0.00	--	--	0.04	0.05
Tritium	9	0	9	0.00	--	--	-0.119	0.134
Uranium-233/234	20	18	2	0.90	0.246	0.652	0.053	0.164
Uranium-235	162	1	161	0.01	0.192	0.192	0	0.38
Uranium-238	20	19	1	0.95	0.188	0.777	0.16	0.16
Anions (mg/kg)								
Chloride	2	2	0	1.00	14.1	18.3	--	--
Cyanide	6	0	6	0.00	--	--	0.28	0.51
Fluoride	2	2	0	1.00	5.7	6.5	--	--
Nitrogen in nitrite and nitrate	2	0	2	0.00	--	--	2.57	2.72
Phosphate	2	0	2	0.00	--	--	2	2
Sulfate	6	6	0	1.00	1.5	49	--	--
Sulfide	6	0	6	0.00	--	--	24.6	42.7
Other								
pH measurement	1	1	0	1.00	4.3	4.3	--	--

-- = not applicable
BHC = benzene hexachloride

Table 5-13. Summary of Waste Site Soil Data Used for 300 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Aluminum	21	21	0	1.00	4,900	14,500	--	--
Antimony	21	4	17	0.19	0.172	3	0.2	2.53
Arsenic	87	72	15	0.83	0.83	20.9	3.38	14.8
Barium	40	40	0	1.00	50	166	--	--
Beryllium	45	45	0	1.00	0.144	0.65	--	--
Cadmium	44	15	29	0.34	0.04	1	0.029	0.449
Calcium	21	21	0	1.00	3,120	14,400	--	--
Calculated total uranium	134	133	1	0.99	0.874	363	0.539	0.539
Chromium	44	44	0	1.00	3.9	53.6	--	--
Cobalt	21	21	0	1.00	6.3	11.7	--	--
Copper	21	21	0	1.00	9.1	2,400	--	--
Iron	21	21	0	1.00	17,200	32,200	--	--
Lead	54	54	0	1.00	2.4	120	--	--
Magnesium	21	21	0	1.00	3,550	8,070	--	--
Manganese	21	21	0	1.00	259	464	--	--
Mercury	9	9	0	1.00	0.39	1.8	--	--
Nickel	21	21	0	1.00	8.5	136	--	--
Potassium	21	21	0	1.00	813	2,370	--	--
Selenium	22	10	12	0.45	0.49	1.6	0.329	4.58
Silver	22	17	5	0.77	0.087	19	0.045	0.371
Sodium	21	21	0	1.00	127	312	--	--
Thallium	71	14	57	0.20	0.452	4	0.278	7.8
Vanadium	21	21	0	1.00	41.1	70.3	--	--
Zinc	21	21	0	1.00	35.9	112	--	--
Organics (mg/kg)								
1,1,2,2-Tetrachloroethane	3	3	0	1.00	0.1	0.14	--	--
1,2,4-Trichlorobenzene	28	0	28	0.00	--	--	0.02	0.38
1,2-Dichlorobenzene	28	0	28	0.00	--	--	0.02	0.38
1,3-Dichlorobenzene	28	0	28	0.00	--	--	0.02	0.38

Table 5-13. Summary of Waste Site Soil Data Used for 300 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
1,4-Dichlorobenzene	28	0	28	0.00	--	--	0.02	0.38
2,4,5-Trichlorophenol	28	0	28	0.00	--	--	0.05	0.94
2,4,6-Trichlorophenol	28	0	28	0.00	--	--	0.02	0.38
2,4-Dichlorophenol	28	0	28	0.00	--	--	0.02	0.38
2,4-Dimethylphenol	28	0	28	0.00	--	--	0.02	0.38
2,4-Dinitrophenol	28	0	28	0.00	--	--	0.05	1.8
2,4-Dinitrotoluene	28	0	28	0.00	--	--	0.02	0.38
2,6-Dinitrotoluene	28	0	28	0.00	--	--	0.02	0.38
2-Butoxyethanol	1	1	0	1.00	0.24	0.24	--	--
2-Chloronaphthalene	28	0	28	0.00	--	--	0.02	0.38
2-Chlorophenol	28	0	28	0.00	--	--	0.02	0.38
2-Methylnaphthalene	28	0	28	0.00	--	--	0.02	0.38
2-Methylphenol [cresol, o-]	28	0	28	0.00	--	--	0.02	0.38
2-Nitroaniline	28	0	28	0.00	--	--	0.05	1.8
2-Nitrophenol	28	0	28	0.00	--	--	0.02	0.38
3,3'-Dichlorobenzidine	28	0	28	0.00	--	--	0.02	1.8
3-Nitroaniline	28	0	28	0.00	--	--	0.05	1.8
4,6-Dinitro-2-methylphenol	28	0	28	0.00	--	--	0.05	1.8
4-Bromophenylphenyl ether	28	0	28	0.00	--	--	0.02	0.38
4-Chloro-3-methylphenol	28	0	28	0.00	--	--	0.02	0.38
4-Chloroaniline	28	0	28	0.00	--	--	0.02	0.38
4-Chlorophenylphenyl ether	28	0	28	0.00	--	--	0.02	0.38
4-Methylphenol [cresol, p-]	28	0	28	0.00	--	--	0.02	0.38
4-Nitroaniline	28	0	28	0.00	--	--	0.05	1.8
4-Nitrophenol	28	0	28	0.00	--	--	0.05	1.8
Acenaphthene	28	0	28	0.00	--	--	0.02	0.38
Acenaphthylene	28	0	28	0.00	--	--	0.02	0.38
Aldrin	9	0	9	0.00	--	--	0.0017	0.0019
Alpha-BHC	9	0	9	0.00	--	--	0.0017	0.0019
alpha-Chlordane	9	0	9	0.00	--	--	0.0017	0.0019
Anthracene	28	0	28	0.00	--	--	0.02	0.38

Table 5-13. Summary of Waste Site Soil Data Used for 300 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Aroclor-1016	105	0	105	0.00	--	--	0.013	0.18
Aroclor-1221	105	0	105	0.00	--	--	0.013	0.36
Aroclor-1232	105	0	105	0.00	--	--	0.013	0.18
Aroclor-1242	105	1	104	0.01	0.042	0.042	0.013	0.18
Aroclor-1248	105	8	97	0.08	0.057	3	0.013	0.17
Aroclor-1254	105	26	79	0.25	0.036	0.405	0.013	0.18
Aroclor-1260	105	4	101	0.04	0.038	0.11	0.013	0.18
Benzo[a]anthracene	29	1	28	0.03	0.038	0.038	0.02	0.38
Benzo[a]pyrene	67	0	67	0.00	--	--	0.02	0.41
Benzo[b]fluoranthene	28	0	28	0.00	--	--	0.02	0.38
Benzo[ghi]perylene	28	0	28	0.00	--	--	0.02	0.38
Benzo[k]fluoranthene	28	0	28	0.00	--	--	0.02	0.38
beta-1,2,3,4,5,6-Hexachlorocyclohexane	9	0	9	0.00	--	--	0.0017	0.0019
Bis[2-chloro-1-methylethyl]ether	28	0	28	0.00	--	--	0.02	0.38
Bis[2-Chloroethoxy]methane	28	0	28	0.00	--	--	0.02	0.38
Bis[2-chloroethyl] ether	28	0	28	0.00	--	--	0.02	0.38
Bis[2-ethylhexyl] phthalate	48	34	14	0.71	0.019	0.29	0.02	0.37
Butylbenzylphthalate	40	17	23	0.43	0.06	0.23	0.02	0.38
Carbazole	28	0	28	0.00	--	--	0.02	0.38
Chrysene	67	1	66	0.01	0.038	0.038	0.02	0.41
Delta-BHC	9	0	9	0.00	--	--	0.0017	0.0019
Dibenz[a,h]anthracene	28	0	28	0.00	--	--	0.02	0.38
Dibenzofuran	28	0	28	0.00	--	--	0.02	0.38
Dichlorodiphenyldichloroethane	9	0	9	0.00	--	--	0.0035	0.0038
Dichlorodiphenyldichloroethylene	4	0	4	0.00	--	--	0.0036	0.0038
Dichlorodiphenyltrichloroethane	9	0	9	0.00	--	--	0.0035	0.0038
Dieldrin	9	0	9	0.00	--	--	0.0035	0.0038
Diethylphthalate	28	0	28	0.00	--	--	0.02	0.38
Dimethyl phthalate	28	0	28	0.00	--	--	0.02	0.38
Di-n-butylphthalate	33	5	28	0.15	0.072	0.15	0.02	0.38
Di-n-octylphthalate	28	0	28	0.00	--	--	0.02	0.38

Table 5-13. Summary of Waste Site Soil Data Used for 300 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Endosulfan I	9	0	9	0.00	--	--	0.0017	0.0019
Endosulfan II	9	0	9	0.00	--	--	0.0035	0.0038
Endosulfan sulfate	9	0	9	0.00	--	--	0.0035	0.0038
Endrin	9	0	9	0.00	--	--	0.0035	0.0038
Endrin aldehyde	9	0	9	0.00	--	--	0.003	0.0038
Endrin ketone	9	0	9	0.00	--	--	0.0035	0.0038
Fluoranthene	28	0	28	0.00	--	--	0.02	0.38
Fluorene	28	0	28	0.00	--	--	0.02	0.38
Gamma-BHC (lindane)	9	0	9	0.00	--	--	0.0017	0.0019
gamma-Chlordane	9	0	9	0.00	--	--	0.0017	0.0019
Heptachlor	9	0	9	0.00	--	--	0.0017	0.0019
Heptachlor epoxide	9	2	7	0.22	0.0023	0.0032	0.0017	0.0019
Heptacosane	1	1	0	1.00	0.25	0.25	--	--
Heptadecane	1	1	0	1.00	0.4	0.4	--	--
Hexachlorobenzene	28	0	28	0.00	--	--	0.02	0.38
Hexachlorobutadiene	28	0	28	0.00	--	--	0.02	0.38
Hexachlorocyclopentadiene	28	0	28	0.00	--	--	0.02	1.8
Hexachloroethane	28	0	28	0.00	--	--	0.02	0.38
Hexadecanoic acid [9CI]	13	13	0	1.00	0.14	0.83	--	--
Indeno[1,2,3-cd]pyrene	28	0	28	0.00	--	--	0.02	0.38
Isophorone	28	0	28	0.00	--	--	0.02	0.38
Methoxychlor	9	0	9	0.00	--	--	0.017	0.0197
Naphthalene	28	0	28	0.00	--	--	0.02	0.38
Nitrobenzene	28	0	28	0.00	--	--	0.02	0.38
N-Nitroso-di-n-dipropylamine	28	0	28	0.00	--	--	0.02	0.38
N-Nitrosodiphenylamine	28	0	28	0.00	--	--	0.02	0.38
Octacosane	1	1	0	1.00	0.26	0.26	--	--
Octadecanoic acid	1	1	0	1.00	0.091	0.091	--	--
Pentachlorophenol	28	0	28	0.00	--	--	0.05	1.8
Phenanthrene	28	0	28	0.00	--	--	0.02	0.38
Phenol	28	1	27	0.04	0.028	0.028	0.02	0.38

Table 5-13. Summary of Waste Site Soil Data Used for 300 Record of Decision Decision Area Shallow Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Pyrene	28	0	28	0.00	--	--	0.02	0.38
Toxaphene	9	0	9	0.00	--	--	0.17	0.19
Radionuclides (pCi/g)								
Americium-241	73	3	70	0.04	0.0523	0.479	0	0.45
Cesium-134	6	0	6	0.00	--	--	0.035	0.051
Cesium-137	112	40	72	0.36	0.0228	2.9	-0.0104	0.107
Cobalt-60	112	23	89	0.21	0.0549	7.2	-0.0161	0.0849
Europium-152	112	0	112	0.00	--	--	-0.113	0.145
Europium-154	112	0	112	0.00	--	--	-0.0597	0.2
Europium-155	112	0	112	0.00	--	--	0.00871	0.732
Gross alpha	2	2	0	1.00	58.7	62.7	--	--
Gross beta	2	2	0	1.00	53.3	67.6	--	--
Manganese-54	6	0	6	0.00	--	--	0.026	0.034
Plutonium-238	4	0	4	0.00	--	--	0	0
Plutonium-239/240	4	0	4	0.00	--	--	0	0.097
Potassium-40	109	108	1	0.99	6.8	16.3	0.27	0.27
Radium-224	38	38	0	1.00	0.485	1.08	--	--
Radium-226	108	108	0	1.00	0.274	1.6	--	--
Radium-228	108	106	2	0.98	0.409	1.14	0.706	1
Ruthenium-103	4	0	4	0.00	--	--	0.024	0.029
Ruthenium-106	4	0	4	0.00	--	--	0.23	0.29
Strontium-90	5	1	4	0.20	0.297	0.297	-0.046	-0.007
Technetium-99	6	0	6	0.00	--	--	-0.133	0.001
Thorium-228	69	69	0	1.00	0.426	0.996	--	--
Thorium-232	69	69	0	1.00	0.409	1.06	--	--
Thorium-234	6	6	0	1.00	18	75	--	--
Tritium	7	0	7	0.00	--	--	-3.38	0.001
Uranium-233/234	134	133	1	0.99	0.241	172	0.183	0.183
Uranium-235	144	87	57	0.60	0.027	18.6	0	0.186
Uranium-238	134	133	1	0.99	0.289	119	0.181	0.181

-- = not applicable
BHC = benzene hexachloride

Table 5-14. Summary of Statistical Comparisons to Reference and Background for 100-B/C Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Inorganics (mg/kg)																									
Aluminum	16	16	4,100	11,400	50	50	3,960	11,900	0.574	0.983	1	--	--	153	153	3,940	28,800	0.947	0.974	1	--	--	No	No	Not different from reference or background
Antimony	52	13	[0.17]	2.7	50	2	[0.2]	[0.66]	--	--	0.131	0.007	Greater	78	8	[11.8]	[29.1]	--	--	1	0.046	Greater	See Table 4-24	Yes	Greater than background and reference based on 1 of 2 tests
Arsenic	122	104	1.6	7.2	50	50	1.6	4.4	0.205	0.091	0.003	--	--	150	133	3	27.7	1	1	1	0.512	Equal	See Table 4-24	Yes	Greater than reference based on 1 of 3 tests; not different from background
Barium	122	122	28.6	364	50	50	48.6	134	1	1	0.175	--	--	153	153	45.2	294	1	1	0.444	--	--	No	No	Not different from reference or background
Beryllium	54	53	[0.041]	1.3	50	48	[0.005]	0.77	0.015	0.001	<0.001	0.946	Equal	150	137	[0.46]	2.5	1	1	1	0.166	Equal	See Table 4-24	Yes	Greater than reference based on 3 of 4 tests; not different from background
Boron	54	41	0.26	22.9	50	46	[0.36]	2.7	0.153	<0.001	<0.001	0.051	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 2 of 4 tests
Cadmium	122	72	0.02	2.3	50	17	[0.03]	0.24	--	<0.001	<0.001	0.005	Greater	150	5	0.61	2.9	--	<0.001	1	<0.001	Greater	See Table 4-24	Yes	Greater than reference, greater than background based on 2 of 3 tests
Calcium	16	16	4,510	31,100	50	50	2,820	9,000	No test	No test	No test	No test	No test	153	153	2,880	86,600	No test	No test	No test	No test	No test	No	No	Essential nutrient
Calculated total uranium	265	259	[2.06E-005]	4.47	50	27	[0.0834]	1.18	<0.001	<0.001	<0.001	<0.001	Greater	47	47	1.06	3.63	1	1	0.372	--	--	See Table 4-24	Yes	Greater than reference, not different from background
Chromium	349	349	3	46.5	50	50	4.5	14.4	<0.001	<0.001	<0.001	--	--	153	153	2.9	33.2	0.028	0.873	0.077	--	--	See Table 4-24	Yes	Greater than reference, greater than background based on 1 of 3 tests
Cobalt	54	54	5.3	10.2	50	50	6	12.5	0.998	0.999	1	--	--	151	151	5.7	26	1	1	1	--	--	No	No	Not different from reference or background
Copper	54	54	8.4	114	50	50	10.3	22.1	0.33	0.146	0.008	--	--	153	153	8.1	40.3	0.09	0.084	0.017	--	--	See Table 4-24	Yes	Greater than background and reference based on 1 of 3 tests
Hexavalent chromium	287	38	[0.03]	[4.4]	50	24	[0.181]	0.489	--	--	0.047	<0.001	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 2 tests
Iron	16	16	15,200	26,700	50	50	17,200	28,900	0.7	0.975	1	--	--	153	153	12,300	53,600	0.882	1	1	--	--	No	No	Not different from reference or background
Lead	349	309	0.96	247	50	50	3.6	9.1	0.547	0.094	<0.001	--	--	153	153	1.1	74.1	0.405	0.345	0.335	--	--	See Table 4-24	Yes	Greater than reference based on 1 of 3 tests; not different from background
Lithium	14	14	3.4	8.9	50	50	4.1	11.4	0.985	1	1	--	--	75	21	34	38.2	--	1	1	--	--	No	No	Not different from reference or background
Magnesium	16	16	3,240	7,460	50	50	3,500	6,370	No test	No test	No test	No test	No test	153	153	2,900	10,500	No test	No test	No test	No test	No test	No	No	Essential nutrient
Manganese	54	54	157	446	50	50	280	567	1	1	1	--	--	153	153	196	1,100	1	1	1	--	--	No	No	Not different from reference or background
Mercury	344	104	[0.01]	1.4	50	2	[0.0189]	[0.025]	--	0.002	0.037	<0.001	Greater	151	30	0.1	3.8	--	0.533	1	0.023	Greater	See Table 4-24	Yes	Greater than reference, greater than background based on 1 of 3 tests
Molybdenum	54	25	[0.2]	1.9	50	15	[0.1]	0.94	--	0.146	0.008	0.132	Equal	96	9	2	4.3	--	<0.001	1	<0.001	Greater	See Table 4-24	Yes	Greater than reference based on 1 of 3 tests; greater than background based on 2 of 3 tests
Nickel	54	54	6.6	22.7	50	50	7.4	16.9	0.512	0.974	0.267	--	--	153	152	6.5	31.3	0.99	0.999	1	--	--	No	No	Not different from reference or background
Potassium	16	16	611	1,610	50	50	779	2,540	No test	No test	No test	No test	No test	150	150	851	7,900	No test	No test	No test	No test	No test	No	No	Essential nutrient
Selenium	122	11	[0.0035]	3	50	0	[0.17]	[0.71]	--	--	--	0.064	Equal	125	8	0.96	6	--	--	1	0.594	Equal	See Table 4-24	Yes	Not different from background; not different from reference, 1 test
Silicon	30	30	125	857	50	50	198	502	No test	No test	No test	No test	No test	133	133	5.2	682	No test	No test	No test	No test	No test	No	No	Soil property measurement
Silver	122	10	[0.0025]	6.6	50	0	[0.07]	[0.218]	--	--	--	0.084	Equal	150	49	[1.4]	14.6	--	1	1	<0.001	Less	See Table 4-24	Yes	Not different from background; not different from reference, 1 test
Sodium	16	16	115	498	50	50	84.7	247	No test	No test	No test	No test	No test	150	149	[101]	6,060	No test	No test	No test	No test	No test	No	No	Essential nutrient
Vanadium	54	54	16.6	71.6	50	50	37.7	71.6	1	0.996	1	--	--	153	153	24.3	105	1	1	1	--	--	No	No	Not different from reference or background

Table 5-14. Summary of Statistical Comparisons to Reference and Background for 100-B/C Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Zinc	54	54	22.7	250	50	50	36.1	58.4	0.79	0.059	<0.001	--	--	153	153	24.2	366	0.985	0.677	1	--	--	See Table 4-24	Yes	Greater than reference based on 1 of 3 tests; not different from background
Organics (mg/kg)																									
Acetone	30	1	0.00318	[0.011]	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	No reference data; no background data
Anthracene	88	2	0.0225	[3.5]	50	22	0.00087	0.0093	--	--	<0.001	<0.001	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 2 tests
Aroclor-1254	91	18	0.0085	[0.76]	50	0	[0.013]	[0.013]	--	--	--	0.002	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference, 1 test
Aroclor-1260	91	2	0.011	[0.76]	50	0	[0.013]	[0.013]	--	--	--	0.756	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Not different from reference, 1 test
Benzo[a] anthracene	88	11	0.018	[3.5]	50	7	0.00083	0.0037	--	--	<0.001	0.991	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 2 tests
Benzo[a]pyrene	88	9	0.023	[3.5]	50	11	0.00085	0.0058	--	--	<0.001	0.102	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 2 tests
Benzo[b] fluoranthene	88	9	0.028	[3.5]	50	13	0.0009	0.0079	--	--	<0.001	0.028	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 2 tests
Benzo[ghi] perylene	88	8	0.017	[3.5]	50	6	0.0014	0.0044	--	--	<0.001	0.802	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 2 tests
Benzo[k] fluoranthene	88	10	0.019	[3.5]	50	5	0.00083	[0.00335]	--	--	<0.001	0.97	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 2 tests
beta-1,2,3,4,5,6-Hexachloro-cyclohexane	48	1	[0.0017]	[0.017]	50	0	[4E-006]	[0.0013]	--	--	--	0.984	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Not different from reference, 1 test
Bis[2-ethylhexyl] phthalate	88	63	0.017	[3.5]	50	38	0.017	[0.33]	0.175	0.455	0.089	0.7173	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 4 tests
Butylbenzyl-phthalate	88	2	0.017	[3.5]	50	0	[0.33]	[0.34]	--	--	--	0.7392	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Not different from reference, 1 test
Carbazole	88	3	0.02	[3.5]	50	0	[0.33]	[0.34]	--	--	--	0.476	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Not different from reference, 1 test
Chrysene	88	13	0.019	[3.5]	50	17	0.00095	0.01	--	0.981	<0.001	0.016	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 3 tests
Dibenz[a,h] anthracene	88	2	0.018	[3.5]	50	0	[0.00327]	[0.00335]	--	--	--	0.739	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	see Table 4-24	Yes	Not different from reference, 1 test
DDE	48	1	[0.0033]	[0.034]	50	5	[4E-006]	[0.0013]	--	--	0.091	0.225	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
DDT	48	5	[0.0033]	[0.034]	50	0	[4E-006]	[0.0013]	--	--	--	0.06	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Not different from reference, 1 test
Dieldrin	48	2	[0.0017]	[0.017]	50	0	[4E-006]	[0.0013]	--	--	--	0.457	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Not different from reference, 1 test
Di-n-butylphthalate	88	31	0.017	[3.5]	50	11	0.02	[0.34]	--	0.005	0.738	0.153	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 3 tests
Di-n-octylphthalate	88	1	0.028	[3.5]	50	0	[0.33]	[0.34]	--	--	--	0.774	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Not different from reference, 1 test
Endrin aldehyde	48	1	[0.0033]	[0.034]	50	1	[4E-006]	0.0016	--	--	0.02	0.493	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 2 tests
Fluoranthene	88	17	0.019	[3.5]	50	4	0.0019	0.018	--	--	<0.001	0.125	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 2 tests
gamma-Chlordane	48	1	[0.0017]	0.024	50	0	[4E-006]	[0.0013]	--	--	--	0.984	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Not different from reference, 1 test
IndeNo[1,2,3-cd] pyrene	88	6	0.019	[3.5]	50	2	0.0028	0.0039	--	--	<0.001	0.763	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 2 tests

Table 5-14. Summary of Statistical Comparisons to Reference and Background for 100-B/C Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Methylene-chloride	30	7	0.0038	[0.024]	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	No reference data; no background data
Pentachloro-pheNol	88	1	0.15	[8.8]	50	2	0.0095	[0.84]	--	--	0.024	0.616	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 2 tests
Phenanthrene	88	10	0.021	[3.5]	50	26	0.00083	0.0177	--	1	<0.001	<0.001	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 3 tests
PheNol	88	4	0.017	[3.5]	50	1	0.0184	[0.34]	--	--	0.6	0.768	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Pyrene	88	18	0.017	[3.5]	50	15	0.00083	0.0084	--	0.567	<0.001	0.291	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Greater than reference based on 1 of 3 tests
Toluene	30	7	0.001	0.00702	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	No reference data; no background data
Radionuclides (pCi/g)																									
Actinium-228	3	1	[-230]	[47,500]	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Short half-life
Americium-241	331	21	[-0.099]	0.642	60	3	[-0.025]	[0.4]	--	--	0.321	0.915	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Cesium-137	331	161	[-0.00191]	6.39	60	22	0.052	0.492	--	0.195	0.002	0.117	Equal	55	55	-0.0017	1.78	--	1	0.289	--	--	See Table 4-24	Yes	Greater than reference based on 1 of 3 tests; not different from background
Cobalt-60	331	22	[-0.0677]	0.456	50	0	[0.054]	[0.18]	--	--	--	0.121	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Not different from reference, 1 test
Europium-152	331	85	[-0.0125]	4.43	50	0	[0.11]	[0.34]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	No	Greater than reference based on 2 tests
Europium-154	331	7	[-0.0713]	[0.473]	50	0	[0.13]	[0.55]	--	--	--	0.636	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	Not different from reference, 1 test
Gross alpha	42	25	[0.735]	9	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	No reference data; no background data
Gross beta	42	42	11.4	33.7	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	No reference data; no background data
Nickel-63	135	24	[-3.21]	78.9	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	No reference data; no background data
Plutonium-238	243	2	[-0.068]	0.367	60	1	[-0.039]	[0.22]	--	--	0.651	0.891	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference or background
Plutonium-239/240	243	37	[-0.027]	0.528	60	4	[-0.015]	[0.384]	--	--	0.07	0.127	Equal	44	44	-0.005	0.0291	--	1	<0.001	--	--	See Table 4-24	Yes	Not different from reference, greater than background based on 1 of 2 tests
Potassium-40	312	311	[0.93]	16.4	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-224	13	13	0.488	0.823	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Radium-226	312	308	[0.096]	1.34	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-228	309	293	[0.21]	1.71	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Strontium-90	248	32	[-0.166]	3.77	60	4	[-0.086]	1.5	--	--	0.173	0.261	Equal	28	28	0.008	0.348	--	1	0.19	--	--	No	Yes	Not different from reference or background
Thorium-228	296	294	[0.057]	1.93	50	37	[0.191]	0.945	No test	No test	No test	No test	No test	49	49	0.529	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-232	296	280	[0.21]	1.71	50	41	[0.079]	0.891	No test	No test	No test	No test	No test	49	49	0.468	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-234	3	1	[0.0197]	1.1	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Short half-life
Uranium-233/234	265	260	[0.058]	1.54	50	28	[0]	0.505	<0.001	<0.001	<0.001	<0.001	Greater	92	92	0.286	1.51	1	1	0.551	--	--	See Table 4-24	Yes	Greater than reference, not different from background
Uranium-235	331	33	[-0.0888]	[0.41]	50	0	[-0.017]	[0.093]	--	--	--	0.039	Greater	76	46	[0.00462]	0.386	--	--	1	<0.001	Less	See Table 4-24	Yes	Not different from background; Greater than reference, 1 test

Table 5-14. Summary of Statistical Comparisons to Reference and Background for 100-B/C Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Uranium-238	265	259	[0]	1.49	50	27	[0.028]	0.397	<0.001	<0.001	<0.001	<0.001	Greater	92	92	0.297	1.23	1	1	0.165	--	--	See Table 4-24	Yes	Greater than reference, not different from background
Anions (mg/kg)																									
Total petroleum hydrocarbons	52	14	7.8	[134]	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-24	Yes	No reference data; no background data

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
DDE = dichlorodiphenyldichloroethylene
DDT = dichlorodiphenyltrichloroethane
No bkg data = no background site data available
No ref data = no reference site data available
No test = no statistical test performed

Table 5-15. Summary of Statistical Comparisons to Reference and Background for 100-K Record of Decision Decision Area Shallow Zone Soil Data. (2 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Inorganics (mg/kg)																									
Arsenic	19	19	1	6.7	50	50	1.6	4.4	0.7	0.324	0.018	--	--	150	133	3	27.7	1	0.988	1	--	--	See Table 4-25	Yes	Greater than reference based on 1 of 3 tests
Barium	19	19	40.1	100	50	50	48.6	134	0.999	1	1	--	--	153	153	45.2	294	1	1	1	--	--	No	No	Not different from reference sites or background
Cadmium	19	11	[0.03]	0.64	50	17	[0.03]	0.24	--	0.096	0.073	0.126	Equal	150	5	0.61	2.9	--	--	1	<0.001	Greater	See Table 4-25	Yes	Not different from reference sites, greater than background based on 1 of 2 tests
Calculated total uranium	66	66	0.98	4.29	50	27	[0.0834]	1.18	<0.001	<0.001	<0.001	--	--	47	47	1.06	3.63	1	1	0.584	--	--	See Table 4-25	Yes	Greater than reference, not different from background
Chromium	30	30	3.8	30	50	50	4.5	14.4	0.011	0.012	<0.001	--	--	153	153	2.9	33.2	0.131	0.89	1	--	--	See Table 4-25	Yes	Greater than reference, not different from background
Hexavalent chromium	96	39	[0.2]	1.4	50	24	[0.181]	0.489	--	0.269	0.002	0.498	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference based on 1 of 3 tests
Lead	22	22	2.5	63.2	50	50	3.6	9.1	0.026	0.021	<0.001	--	--	153	153	1.1	74.1	0.019	0.044	1	--	--	See Table 4-25	Yes	Greater than reference, greater than background based on 2 of 3 tests
Mercury	19	15	[0.02]	17.5	50	2	[0.0189]	[0.025]	--	<0.001	<0.001	<0.001	Greater	151	30	0.1	3.8	--	<0.001	<0.001	<0.001	Greater	Yes	No	Greater than background and reference
Organics (mg/kg)																									
Benzo[a] anthracene	1	1	0.103	0.103	50	7	0.00083	0.0037	--	--	0.02	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference, 1 test
Benzo[a]pyrene	1	1	0.051	0.051	50	11	0.00085	0.0058	--	0.196	0.02	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference based on 1 of 2 tests
Benzo[b] fluoranthene	1	1	0.075	0.075	50	13	0.0009	0.0079	--	0.177	0.02	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference based on 1 of 2 tests
Benzo[ghi] perylene	1	1	0.033	0.033	50	6	0.0014	0.0044	--	--	0.02	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference, 1 test
Benzo[k] fluoranthene	1	1	0.078	0.078	50	5	0.00083	[0.00335]	--	--	0.167	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference, 1 test
Bis[2-ethylhexyl] phthalate	1	1	0.069	0.069	50	38	0.017	[0.33]	--	0.196	1	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Chrysene	1	1	0.148	0.148	50	17	0.00095	0.01	--	0.196	0.02	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference based on 1 of 2 tests
Ethylene glycol	2	1	[10]	59	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	No reference data; no background data
Fluoranthene	1	1	0.22	0.22	50	4	0.0019	0.018	--	--	0.02	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference, 1 test
IndeNo[1,2,3-cd] pyrene	1	1	0.029	0.029	50	2	0.0028	0.0039	--	--	0.02	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference, 1 test
Phenanthrene	1	1	0.046	0.046	50	26	0.00083	0.0177	--	0.196	0.02	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference based on 1 of 2 tests
Pyrene	1	1	0.15	0.15	50	15	0.00083	0.0084	--	0.177	0.02	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference based on 1 of 2 tests
Radionuclides (pCi/g)																									
Americium-241	118	1	[-0.073]	0.532	60	3	[-0.025]	[0.4]	--	--	0.818	0.218	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Carbon-14	40	1	[-2.87]	2.98	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	No reference data; no background data
Cesium-137	118	85	0.022	4.69	60	22	0.052	0.492	--	0.004	0.004	<0.001	Greater	55	55	-0.0017	1.78	1	1	0.213	--	--	See Table 4-25	Yes	Greater than reference, not different from background

Table 5-15. Summary of Statistical Comparisons to Reference and Background for 100-K Record of Decision Decision Area Shallow Zone Soil Data. (2 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Cobalt-60	118	20	[0.026]	0.319	50	0	[0.054]	[0.18]	--	--	--	0.004	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference, 1 test
Europium-152	118	73	0.062	10.4	50	0	[0.11]	[0.34]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	No	Greater than background and reference
Europium-154	118	17	[0.089]	[1.1]	50	0	[0.13]	[0.55]	--	--	--	0.011	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	Greater than reference, 1 test
Nickel-63	40	10	[-12.5]	11.7	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-25	Yes	No reference data; no background data
Plutonium-239/240	66	1	[-0.053]	0.918	60	4	[-0.015]	[0.384]	--	--	0.524	0.307	Equal	44	44	-0.005	0.0291	--	1	0.527	--	--	No	No	Not different from reference sites or background
Potassium-40	118	117	[1.3]	28.7	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-226	118	118	0.257	1.02	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-228	118	118	0.22	1.75	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Strontium-90	74	21	[-0.063]	2.74	60	4	[-0.086]	1.5	--	--	0.303	0.003	Greater	28	28	0.008	0.348	--	0.008	0.034	--	--	See Table 4-25	Yes	Greater than background, greater than reference based on 1 of 2 tests
Thorium-228	118	117	[0.086]	1.57	50	37	[0.191]	0.945	No test	No test	No test	No test	No test	49	49	0.529	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-232	118	118	0.22	1.75	50	41	[0.079]	0.891	No test	No test	No test	No test	No test	49	49	0.468	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Uranium-233/234	66	66	0.261	1.59	50	28	[0]	0.505	<0.001	<0.001	<0.001	--	--	92	92	0.286	1.51	1	1	0.418	--	--	See Table 4-25	Yes	Greater than reference, not different from background
Uranium-235	118	5	[0]	[0.27]	50	0	[-0.017]	[0.093]	--	--	--	0.327	Equal	76	46	[0.00462]	0.386	--	1	1	<0.001	Less	See Table 4-25	Yes	Not different from reference based on 1 test, not different from background
Uranium-238	66	66	0.318	1.43	50	27	[0.028]	0.397	<0.001	<0.001	<0.001	--	--	92	92	0.297	1.23	1	1	0.418	--	--	See Table 4-25	Yes	Greater than reference, not different from background
Anions (mg/kg)																									
Sulfate	4	4	4.96	2630	10	10	0.645	3.79	0.00291	0.066	<0.001	--	--	153	153	1	4,340	0.013	0.025	1	--	--	See Table 4-25	Yes	Greater than reference and background based on 2 of 3 tests
Other																									
pH measurement	4	4	6.69	8.44	10	10	7.26	9	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Physical measurement

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
No bkg data = no background site data available
No ref data = no reference site data available
No test = no statistical test performed

Table 5-16. Summary of Statistical Comparisons to Reference and Background for 100-N Record of Decision Decision Area Shallow Zone Soil Data. (2 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Inorganics (mg/kg)																									
Barium	2	2	63.5	81.9	50	50	48.6	134	--	1	1	--	--	153	153	45.2	294	--	1	1	--	--	No	No	Not different from reference sites or background
Beryllium	2	2	0.29	0.32	50	48	[0.005]	0.77	--	1	1	--	--	150	137	[0.46]	2.5	--	1	1	--	--	No	No	Not different from reference sites or background
Cadmium	2	1	[0.47]	0.53	50	17	[0.03]	0.24	--	0.382	0.02	0.771	Equal	150	5	0.61	2.9	--	--	1	0.124	Equal	See Table 4-26	Yes	Not different from background, greater than reference based on 1 of 3 tests
Chromium	2	2	7.8	9.9	50	50	4.5	14.4	--	1	1	--	--	153	153	2.9	33.2	--	1	1	--	--	No	No	Not different from reference sites or background
Copper	2	2	15.1	16.2	50	50	10.3	22.1	--	1	1	--	--	153	153	8.1	40.3	--	1	1	--	--	No	No	Not different from reference sites or background
Lead	2	2	3.6	4.3	50	50	3.6	9.1	--	1	1	--	--	153	153	1.1	74.1	--	1	1	--	--	No	No	Not different from reference sites or background
Manganese	2	2	331	376	50	50	280	567	--	1	1	--	--	153	153	196	1,100	--	1	1	--	--	No	No	Not different from reference sites or background
Mercury	22	2	[0.01]	0.04	50	2	[0.0189]	[0.025]	--	--	0.595	0.756	Equal	151	30	0.1	3.8	--	--	1	0.356	Equal	No	Yes	Not different from reference sites or background
Nickel	2	2	10.1	12.6	50	50	7.4	16.9	--	1	1	--	--	153	152	6.5	31.3	--	1	1	--	--	No	No	Not different from reference sites or background
Vanadium	2	2	50.9	58.3	50	50	37.7	71.6	--	1	1	--	--	153	153	24.3	105	--	1	1	--	--	No	No	Not different from reference sites or background
Zinc	2	2	41.4	50.9	50	50	36.1	58.4	--	1	1	--	--	153	153	24.2	366	--	1	1	--	--	No	No	Not different from reference sites or background
Radionuclides (pCi/g)																									
Americium-241	20	1	[-0.13]	[0.387]	60	3	[-0.025]	[0.4]	--	--	0.546	0.554	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Cesium-137	32	16	[0.009]	1.27	60	22	0.052	0.492	--	0.94	0.348	0.31	Equal	55	55	-0.0017	1.78	1	1	1	--	--	No	No	Not different from reference sites or background
Cobalt-60	32	18	[0.009]	0.796	50	0	[0.054]	[0.18]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	No	Greater than reference based on 2 tests
Europium-155	32	1	[0.025]	[0.13]	50	0	[0.097]	[0.27]	--	--	--	0.821	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-26	Yes	Not different from reference, 1 test
Gross beta	3	2	[3.52]	15	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-26	Yes	No reference data; no background data
Potassium-40	20	20	8.03	13.2	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-226	20	19	[0.075]	0.534	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-228	20	20	0.387	0.793	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Strontium-90	20	3	[-0.119]	1.14	60	4	[-0.086]	1.5	--	--	1	0.493	Equal	28	28	0.008	0.348	--	0.887	0.066	--	--	No	No	Not different from reference sites or background
Thorium-228	20	20	0.405	0.868	50	37	[0.191]	0.945	No test	No test	No test	No test	No test	49	49	0.529	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-232	20	20	0.387	0.793	50	41	[0.079]	0.891	No test	No test	No test	No test	No test	49	49	0.468	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Tritium	10	1	[-0.066]	0.261	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-26	Yes	No reference data; no background data
Anions (mg/kg)																									
Nitrogen in nitrate	2	2	3.39	5.65	50	35	0.0771	2.03	--	0.034	<0.001	--	--	153	147	0.135	205	--	0.039	1	--	--	See Table 4-26	Yes	Greater than reference, greater than background based on 1 of 2 tests
Nitrogen in nitrite and nitrate	22	12	[0.16]	6.2	40	40	0.002	1.3	0.997	0.688	0.041	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-26	Yes	Greater than reference based on 1 of 3 tests

Table 5-16. Summary of Statistical Comparisons to Reference and Background for 100-N Record of Decision Decision Area Shallow Zone Soil Data. (2 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Sulfate	2	2	6.6	43.8	10	10	0.645	3.79	--	0.015	0.015	--	--	153	153	1	4,340	--	1	1	--	--	See Table 4-26	Yes	Greater than reference, not different from background
Other																									
pH measurement	2	2	8.6	9	10	10	7.26	9	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Physical measurement

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
No bkg data = no background site data available
No ref data = no reference site data available
No test = no statistical test performed

Table 5-17. Summary of Statistical Comparisons to Reference and Background for 100-D/100-H Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Inorganics (mg/kg)																									
Arsenic	81	81	0.67	25.7	50	50	1.6	4.4	<0.001	<0.001	<0.001	--	--	150	133	3	27.7	0.928	0.232	1	--	--	See Table 4-27	Yes	Greater than reference, not different from background
Barium	28	28	37.3	110	50	50	48.6	134	1	0.999	1	--	--	153	153	45.2	294	1	1	1	--	--	No	No	Not different from reference or background
Beryllium	2	2	0.66	0.9	50	48	[0.005]	0.77	--	0.319	0.038	--	--	150	137	[0.46]	2.5	--	1	1	--	--	See Table 4-27	Yes	Not different from background, greater than reference based on 1 of 2 tests
Cadmium	12	3	[0.03]	0.33	50	17	[0.03]	0.24	--	0.927	0.194	0.799	Equal	150	5	0.61	2.9	--	--	1	0.008	Greater	See Table 4-27	Yes	Not different from reference, greater than background based on 1 of 2 tests
Calculated total uranium	218	216	[0.384]	3.17	50	27	[0.0834]	1.18	<0.001	<0.001	<0.001	<0.001	Greater	47	47	1.06	3.63	1	1	1	--	--	See Table 4-27	Yes	Greater than reference, not different from background
Chromium	101	101	2.8	204	50	50	4.5	14.4	0.783	0.937	0.015	--	--	153	153	2.9	33.2	0.986	1	0.157	--	--	See Table 4-27	Yes	Not different from background, greater than reference based on 1 of 3 tests
Cobalt	2	2	6	7.4	50	50	6	12.5	--	1	1	--	--	151	151	5.7	26	--	1	1	--	--	No	No	Not different from reference or background
Copper	2	2	13.7	14.7	50	50	10.3	22.1	--	1	1	--	--	153	153	8.1	40.3	--	1	1	--	--	No	No	Not different from reference or background
Hexavalent chromium	262	40	[0.03]	1.9	50	24	[0.181]	0.489	--	1	0.005	<0.001	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Greater than reference based on 1 of 3 tests
Lead	126	126	1.7	94.5	50	50	3.6	9.1	0.69	<0.001	<0.001	--	--	153	153	1.1	74.1	0.648	0.002	0.452	--	--	See Table 4-27	Yes	Greater than reference based on 2 of 3 tests; greater than background based on 1 of 3 tests
Lithium	4	4	7.8	12.5	50	50	4.1	11.4	0.008	0.017	0.074	--	--	75	21	34	38.2	--	1	1	--	--	See Table 4-27	Yes	Not different from background, greater than reference based on 2 of 3 tests
Manganese	2	2	245	269	50	50	280	567	--	1	1	--	--	153	153	196	1,100	--	1	1	--	--	No	No	Not different from reference or background
Mercury	109	18	[0.002]	3.5	50	2	[0.0189]	[0.025]	--	--	0.17	0.051	Equal	151	30	0.1	3.8	--	--	1	0.599	Equal	No	Yes	Not different from reference or background
Molybdenum	2	2	0.18	0.28	50	15	[0.1]	0.94	--	1	1	--	--	96	9	2	4.3	--	--	1	--	--	See Table 4-27	Yes	Not different from reference; not different from reference, 1 test
Nickel	2	2	6.8	8.1	50	50	7.4	16.9	--	1	1	--	--	153	152	6.5	31.3	--	1	1	--	--	No	No	Not different from reference or background
Sodium	4	4	289	447	50	50	84.7	247	No test	No test	No test	No test	No test	150	149	[101]	6,060	No test	No test	No test	No test	No test	No	No	Essential nutrient
Uranium (inorganic)	2	2	1.38	1.56	50	1	[0.97]	[3.21]	--	--	1	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Not greater than reference, 1 test
Vanadium	2	2	49.1	54.5	50	50	37.7	71.6	--	1	1	--	--	153	153	24.3	105	--	1	1	--	--	No	No	Not different from reference or background
Zinc	2	2	35.6	38.1	50	50	36.1	58.4	--	1	1	--	--	153	153	24.2	366	--	1	1	--	--	No	No	Not different from reference or background
Organics (mg/kg)																									
Aroclor-1254	156	5	[0.014]	0.17	50	0	[0.013]	[0.013]	--	--	--	0.451	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Not greater than reference, 1 test
Aroclor-1260	156	18	[0.014]	0.35	50	0	[0.013]	[0.013]	--	--	--	0.026	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Greater than reference, 1 test
Benzo[a] anthracene	18	3	[0.0089]	[0.38]	50	7	0.00083	0.0037	--	--	<0.001	0.909	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Greater than reference based on 1 of 2 tests
Benzo[a]pyrene	18	2	[0.015]	[0.38]	50	11	0.00085	0.0058	--	0.919	<0.001	0.511	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Greater than reference based on 1 of 3 tests

Table 5-17. Summary of Statistical Comparisons to Reference and Background for 100-D/100-H Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Benzo[b] fluoranthene	18	2	[0.012]	[0.38]	50	13	0.0009	0.0079	--	0.919	<0.001	0.33	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Greater than reference based on 1 of 3 tests
Benzo[k] fluoranthene	18	2	0.0102	[0.38]	50	5	0.00083	[0.00335]	--	--	0.048	0.75	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Greater than reference based on 1 of 2 tests
Bis[2-ethylhexyl] phthalate	30	7	0.02	[0.4]	50	38	0.017	[0.33]	--	0.9287	1	<0.001	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not greater than reference, 3 tests
Chrysene	18	1	0.055	[0.38]	50	17	0.00095	0.01	--	0.9924	0.02	0.0419	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Greater than reference based on 1 of 3 tests
Di-n-butylphthalate	14	6	0.025	[0.36]	50	11	0.02	[0.34]	--	0.01697	0.11	0.223	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Greater than reference based on 1 of 3 tests
Fluoranthene	14	3	0.022	[0.38]	50	4	0.0019	0.018	--	--	<0.001	0.348	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Greater than reference based on 1 of 2 tests
Phenanthrene	14	1	0.02	[0.38]	50	26	0.00083	0.0177	--	0.963	0.02	0.007	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Greater than reference based on 1 of 3 tests
Pyrene	14	3	0.02	[0.38]	50	15	0.00083	0.0084	--	0.585	<0.001	0.769	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Greater than reference based on 1 of 3 tests
Radionuclides (pCi/g)																									
Americium-241	252	12	[-0.054]	[0.94]	60	3	[-0.025]	[0.4]	--	--	0.55	0.796	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not greater than reference, 2 tests
Cesium-134	3	1	0.018	[0.054]	50	0	[0.056]	[0.18]	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Short half-life
Cesium-137	252	135	[-0.00155]	10	60	22	0.052	0.492	--	0.31	0.008	0.027	Greater	55	55	-0.0017	1.78	1	1	0.37	--	--	See Table 4-27	Yes	Not different from background, greater than reference based on 2 of 3 tests
Cobalt-60	252	19	[-0.00184]	[0.14]	50	0	[0.054]	[0.18]	--	--	--	0.092	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Not greater than reference, 1 test
Europium-152	252	89	[0]	2.16	50	0	[0.11]	[0.34]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	No	Greater than reference based on 2 tests
Europium-154	252	7	[-0.014]	[0.46]	50	0	[0.13]	[0.55]	--	--	--	0.498	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	Not greater than reference, 1 test
Gross alpha	2	2	4.32	7.25	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	No reference data; no background data
Gross beta	5	5	11.1	14.7	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	No reference data; no background data
Manganese-54	1	1	0.007	0.007	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Short half-life
Nickel-63	108	5	[-1.35]	7.8	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	No reference data; no background data
Plutonium-238	234	5	[-0.103]	0.359	60	1	[-0.039]	[0.22]	--	--	0.522	0.778	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not greater than reference, 2 tests
Plutonium-239/240	234	21	[-0.042]	0.724	60	4	[-0.015]	[0.384]	--	--	0.321	0.755	Equal	44	44	-0.005	0.0291	--	1	0.029	--	--	See Table 4-27	Yes	Not different from reference, greater than background based on 1 of 2 tests
Potassium-40	252	252	6.46	17.2	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-224	15	15	0.413	0.596	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Radium-226	251	249	[0.064]	0.804	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-228	251	246	[0.13]	1.08	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Strontium-90	234	29	[-0.088]	2.7	60	4	[-0.086]	1.5	--	--	0.796	0.306	Equal	28	28	0.008	0.348	--	1	0.222	--	--	No	Yes	Not different from reference or background

Table 5-17. Summary of Statistical Comparisons to Reference and Background for 100-D/100-H Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Technetium-99	48	3	[-0.327]	2.42	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-27	Yes	No reference data; no background data
Thorium-228	236	234	[0.28]	1.1	50	37	[0.191]	0.945	No test	No test	No test	No test	No test	49	49	0.529	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-232	236	231	[0.13]	1.08	50	41	[0.079]	0.891	No test	No test	No test	No test	No test	49	49	0.468	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Uranium-233/234	218	217	0.226	1.38	50	28	[0]	0.505	<0.001	<0.001	<0.001	<0.001	Greater	92	92	0.286	1.51	1	1	1	--	--	See Table 4-27	Yes	Greater than reference, not different from background
Uranium-235	244	25	[0]	[0.19]	50	0	[-0.017]	[0.093]	--	--	--	0.037	Greater	76	46	[0.00462]	0.386	--	1	1	<0.001	Less	See Table 4-27	Yes	Not different from background; greater than reference, 1 test
Uranium-238	218	216	[0.118]	1.05	50	27	[0.028]	0.397	<0.001	<0.001	<0.001	<0.001	Greater	92	92	0.297	1.23	1	1	1	--	--	See Table 4-27	Yes	Greater than reference, not different from background
Anions (mg/kg)																									
Nitrogen in nitrate	2	2	0.515	0.555	50	35	0.0771	2.03	--	1	1	--	--	153	147	0.135	205	--	1	1	--	--	No	No	Not different from reference or background
Nitrogen in nitrite and nitrate	2	2	0.55	0.715	40	40	0.002	1.3	--	1	1	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not greater than reference, 2 tests
Sulfate	2	2	2.08	4.32	10	10	0.645	3.79	--	0.318	0.167	--	--	153	153	1	4,340	--	1	1	--	--	No	No	Not different from reference or background

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
No bkg data = no background site data available
No ref data = no reference site data available
No test = no statistical test performed

Table 5-18. Summary of Statistical Comparisons to Reference and Background for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Inorganics (mg/kg)																									
Aluminum	21	21	3,770	7,840	50	50	3,960	11,900	0.999	1	1	--	--	153	153	3,940	28,800	1	1	1	--	--	No	No	Not different from reference or background
Antimony	21	1	[0.25]	[4.5]	50	2	[0.2]	[0.66]	--	--	1	0.617	Equal	78	8	[11.8]	[29.1]	--	--	1	0.727	Equal	No	No	Not different from reference or background
Arsenic	84	82	1.4	17.3	50	50	1.6	4.4	0.802	0.403	0.002	--	--	150	133	3	27.7	1	0.898	1	0.031	Greater	See Table 4-28	Yes	Greater than reference based on 1 of 3 tests; greater than background based on 1 of 4 tests
Barium	62	62	27.5	508	50	50	48.6	134	1	0.997	0.026	--	--	153	153	45.2	294	1	0.99	0.082	--	--	See Table 4-28	Yes	Not different from background, greater than reference based on 1 of 3 tests
Beryllium	21	18	[0.009]	0.55	50	48	[0.005]	0.77	1	1	1	0.299	Equal	150	137	[0.46]	2.5	1	1	1	0.669	Equal	No	No	Not different from reference or background
Boron	15	15	0.484	23.5	50	46	[0.36]	2.7	0.771	0.344	0.002	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference based on 1 of 3 tests
Cadmium	54	31	[0.027]	0.83	50	17	[0.03]	0.24	--	0.204	0.012	0.028	Greater	150	5	0.61	2.9	--	--	1	<0.001	Greater	See Table 4-28	Yes	Greater than reference based on 2 of 3 tests; greater than background based on 1 of 2 tests
Calcium	21	21	2,540	11,000	50	50	2,820	9,000	No test	No test	No test	No test	No test	153	153	2,880	86,600	No test	No test	No test	No test	No test	No	No	Essential nutrient
Calculated total uranium	20	19	[0.491]	2.4	50	27	[0.0834]	1.18	<0.001	<0.001	<0.001	0.003	Greater	47	47	1.06	3.63	1	1	1	--	--	See Table 4-28	Yes	Greater than reference, not different from background
Chromium	87	87	3.3	67.2	50	50	4.5	14.4	0.019	0.006	<0.001	--	--	153	153	2.9	33.2	0.218	0.906	0.363	--	--	See Table 4-28	Yes	Greater than reference, not different from background
Cobalt	27	27	4.1	8.7	50	50	6	12.5	1	1	1	--	--	151	151	5.7	26	1	1	1	--	--	No	No	Not different from reference or background
Copper	21	19	9.7	18	50	50	10.3	22.1	1	0.996	1	--	--	153	153	8.1	40.3	0.997	0.993	1	--	--	No	No	Not different from reference or background
Hexavalent chromium	180	37	[0.207]	2.1	50	24	[0.181]	0.489	--	0.73	<0.001	<0.001	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference based on 1 of 3 tests
Iron	21	21	9,570	22,400	50	50	17,200	28,900	1	1	1	--	--	153	153	12,300	53,600	1	1	1	--	--	No	No	Not different from reference or background
Lead	69	63	2.4	214	50	50	3.6	9.1	0.998	0.655	<0.001	--	--	153	153	1.1	74.1	0.995	0.661	0.311	--	--	See Table 4-28	Yes	Not different from background, greater than reference based on 1 of 3 tests
Magnesium	21	21	2,770	4,900	50	50	3,500	6,370	No test	No test	No test	No test	No test	153	153	2,900	10,500	No test	No test	No test	No test	No test	No	No	Essential nutrient
Manganese	33	33	185	330	50	50	280	567	1	1	1	--	--	153	153	196	1,100	1	1	1	--	--	No	No	Not different from reference or background
Mercury	54	12	[0.01]	0.38	50	2	[0.0189]	[0.025]	--	--	0.047	0.015	Greater	151	30	0.1	3.8	--	0.54	1	0.864	Equal	See Table 4-28	Yes	Greater than reference, not different from background
Molybdenum	15	13	0.17	0.51	50	15	[0.1]	0.94	--	0.868	1	<0.001	Greater	96	9	2	4.3	--	<0.001	1	<0.001	Greater	See Table 4-28	Yes	Greater than reference based on 1 of 3 tests; greater than background based on 2 of 3 tests
Nickel	21	21	7.9	11.4	50	50	7.4	16.9	0.992	1	1	--	--	153	152	6.5	31.3	1	1	1	--	--	No	No	Not different from reference or background
Potassium	21	21	626	1,380	50	50	779	2,540	No test	No test	No test	No test	No test	150	150	851	7,900	No test	No test	No test	No test	No test	No	No	Essential nutrient
Selenium	50	4	[0.24]	[1.9]	50	0	[0.17]	[0.71]	--	--	--	0.126	Equal	125	8	0.96	6	--	--	1	0.962	Equal	See Table 4-28	Yes	Not different from background; not different from reference, 1 test
Silicon	15	15	115	1,230	50	50	198	502	No test	No test	No test	No test	No test	133	133	5.2	682	No test	No test	No test	No test	No test	No	No	Soil property measurement
Silver	54	1	[0.08]	[0.71]	50	0	[0.07]	[0.218]	--	--	--	0.969	Equal	150	49	[1.4]	14.6	--	1	1	<0.001	Less	See Table 4-28	Yes	Not different from background; not different from reference, 1 test
Sodium	21	19	84.4	888	50	50	84.7	247	No test	No test	No test	No test	No test	150	149	[101]	6,060	No test	No test	No test	No test	No test	No	No	Essential nutrient

Table 5-18. Summary of Statistical Comparisons to Reference and Background for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Thallium	2	1	[0.31]	0.44	50	0	[0.3]	[1.1]	--	--	--	0.015	Greater	151	6	0.61	[3.7]	--	--	1	0.164	Equal	See Table 4-28	Yes	Not different from background; greater than reference, 1 test
Vanadium	21	21	22.7	59.7	50	50	37.7	71.6	1	0.996	1	--	--	153	153	24.3	105	1	1	1	--	--	No	No	Not different from reference or background
Zinc	33	33	24.2	77.7	50	50	36.1	58.4	0.999	0.855	0.1552	--	--	153	153	24.2	366	1	0.9966	1	--	--	No	No	Not different from reference or background
Organics (mg/kg)																									
Acenaphthene	37	2	[0.101]	[4.2]	50	0	[0.0327]	[0.0335]	--	--	--	0.347	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Not different from reference, 1 test
Acenaphthylene	37	1	0.038	[4.2]	50	0	[0.0327]	[0.0335]	--	--	--	0.879	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Not different from reference, 1 test
Anthracene	37	1	[0.00505]	[4.2]	50	22	0.00087	0.0093	--	1	0.123	<0.001	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 3 tests
Aroclor-1248	59	1	[0.013]	[0.85]	50	0	[0.013]	[0.013]	--	--	--	0.934	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Not different from reference, 1 test
Aroclor-1254	59	9	0.0094	1.3	50	0	[0.013]	[0.013]	--	--	--	0.011	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference, 1 test
Aroclor-1260	59	18	0.0064	1.1	50	0	[0.013]	[0.013]	--	--	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference, 1 test
Benzene	5	2	0.002	[0.006]	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	No reference data ; no background data
Benzo[a]anthracene	37	3	0.004	[4.2]	50	7	0.00083	0.0037	--	--	<0.001	0.609	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference based on 1 of 2 tests
Benzo[a]pyrene	37	4	[0.00509]	[4.2]	50	11	0.00085	0.0058	--	--	<0.001	0.281	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference based on 1 of 2 tests
Benzo[b] fluoranthene	37	7	0.0042	6.8	50	13	0.0009	0.0079	--	0.652	<0.001	0.604	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference based on 1 of 3 tests
Benzo[ghi]perylene	37	4	[0.00509]	[4.2]	50	6	0.0014	0.0044	--	--	<0.001	0.867	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference based on 1 of 2 tests
Benzo[k] fluoranthene	37	3	[0.00507]	[4.2]	50	5	0.00083	[0.00335]	--	--	0.018	0.942	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference based on 1 of 2 tests
Bis[2-ethylhexyl] phthalate	30	19	0.0201	[3.4]	50	38	0.017	[0.33]	0.238	0.805	0.107	0.339	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 4 tests
Chrysene	37	4	0.0034	[4.2]	50	17	0.00095	0.01	--	0.982	0.017	0.025	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference based on 1 of 3 tests
Dibenz[a,h] anthracene	37	2	0.0025	[4.2]	50	0	[0.00327]	[0.00335]	--	--	--	0.347	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Not different from reference, 1 test
Dichlorodiphenyl-trichloroethane	13	1	0.0034	[0.19]	50	0	[4e-006]	[0.0013]	--	--	--	0.465	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Not different from reference, 1 test
Diethylphthalate	30	1	0.024	[4.2]	50	0	[0.33]	[0.34]	--	--	--	0.795	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Not different from reference, 1 test
Di-n-butylphthalate	30	6	[0.021]	16	50	11	0.02	[0.34]	--	0.523	0.164	0.944	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 3 tests
Fluoranthene	37	5	0.0084	[4.2]	50	4	0.0019	0.018	--	--	0.013	0.632	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference based on 1 of 2 tests
Fluorene	37	3	0.0034	[4.2]	50	10	0.0013	[0.0335]	--	--	0.125	0.217	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Indeno[1,2,3-cd] pyrene	37	5	0.0026	[4.2]	50	2	0.0028	0.0039	--	--	<0.001	0.225	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference based on 1 of 2 tests
Methylenechloride	5	4	[0.00668]	0.0187	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	No reference data; no background data

Table 5-18. Summary of Statistical Comparisons to Reference and Background for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Naphthalene	37	1	0.1	[4.2]	50	5	0.015	[0.0335]	--	--	0.167	0.368	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Phenanthrene	37	3	0.0026	[4.2]	50	26	0.00083	0.0177	--	0.997	0.123	<0.001	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 3 tests
Phenol	30	1	0.084	[4.2]	50	1	0.0184	[0.34]	--	--	0.5	0.712	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Pyrene	37	5	[0.0101]	[4.2]	50	15	0.00083	0.0084	--	0.935	<0.001	0.121	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference based on 1 of 3 tests
Toluene	5	1	0.001	[0.006]	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	No reference data; no background data
Total petroleum hydrocarbons	15	10	[3.4]	158	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	No reference data; no background data
Radionuclides (pCi/g)																									
Carbon-14	116	3	[-2.5]	5.7	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	No reference data; no background data
Cesium-137	183	74	[0.011]	1.5	60	22	0.052	0.492	--	0.455	0.055	0.714	Equal	55	55	-0.0017	1.78	--	1	1	--	--	No	Yes	Not different from reference or background
Cobalt-60	179	5	[-0.0035]	[0.19]	50	0	[0.054]	[0.18]	--	--	--	0.517	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Not different from reference, 1 test
Europium-152	179	43	[0.0131]	4.13	50	0	[0.11]	[0.34]	--	--	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Greater than reference, 1 test
Europium-154	177	2	[-0.0107]	[0.39]	50	0	[0.13]	[0.55]	--	--	--	0.919	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Not different from reference, 1 test
Europium-155	179	2	[0.022]	[0.25]	50	0	[0.097]	[0.27]	--	--	--	0.913	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	Not different from reference, 1 test
Gross alpha	14	14	4.2	27.9	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	No reference data; no background data
Gross beta	14	14	14.6	24.7	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	No reference data; no background data
Nickel-63	66	24	[-2.26]	14.6	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-28	Yes	No reference data; no background data
Plutonium-239/240	19	1	[0]	[0.04]	60	4	[-0.015]	[0.384]	--	--	1	0.748	Equal	44	44	-0.005	0.0291	--	0.992	0.254	--	--	No	No	Not different from reference or background
Potassium-40	166	166	7.78	23.8	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-224	4	4	0.701	0.779	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Radium-226	166	157	[0.041]	0.957	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-228	166	163	[0.32]	1.36	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Strontium-90	107	17	[-0.099]	4.14	60	4	[-0.086]	1.5	--	--	0.066	0.139	Equal	28	28	0.008	0.348	--	0.994	0.089	--	--	No	Yes	Not different from reference or background
Thorium-228	162	161	[0.081]	1.27	50	37	[0.191]	0.945	No test	No test	No test	No test	No test	49	49	0.529	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-232	162	159	[0.32]	1.36	50	41	[0.079]	0.891	No test	No test	No test	No test	No test	49	49	0.468	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Uranium-233/234	20	18	[0.053]	0.652	50	28	[0]	0.505	<0.001	<0.001	0.001	0.015	Greater	92	92	0.286	1.51	1	1	1	--	--	See Table 4-28	Yes	Greater than reference, not different from background
Uranium-235	162	1	[0]	[0.38]	50	0	[-0.017]	[0.093]	--	--	--	0.533	Equal	76	46	[0.00462]	0.386	--	1	1	<0.001	Less	See Table 4-28	Yes	Not different from background; not different from reference, 1 test
Uranium-238	20	19	[0.16]	0.777	50	27	[0.028]	0.397	<0.001	<0.001	<0.001	0.003	Greater	92	92	0.297	1.23	1	1	1	--	--	See Table 4-28	Yes	Greater than reference, not different from background

Table 5-18. Summary of Statistical Comparisons to Reference and Background for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Anions (mg/kg)																									
Chloride	2	2	14.1	18.3	10	10	0.155	0.63	--	0.015	0.015	--	--	152	152	0.52	1,480	--	1	1	--	--	See Table 4-28	Yes	Greater than reference, not different from background
Fluoride	2	2	5.7	6.5	10	8	0.315	1.14	--	0.015	0.015	--	--	152	150	0.94	73.3	--	0.037	1	--	--	See Table 4-28	Yes	Greater than reference, greater than background based on 1 of 2 tests
Sulfate	6	6	1.5	49	10	10	0.645	3.79	0.022	0.304	0.125	--	--	153	153	1	4,340	0.783	1	1	--	--	See Table 4-28	Yes	Not different from background, greater than reference based on 1 of 3 tests
Other																									
pH measurement	1	1	4.3	4.3	10	10	7.26	9	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Physical measurement

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
No bkg data = no background site data available
No ref data = no reference site data available
No test = no statistical test performed

Table 5-19. Summary of Statistical Comparisons to Reference and Background for 300 Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Inorganics (mg/kg)																									
Aluminum	21	21	4,900	14,500	50	50	3,960	11,900	0.565	0.815	0.296	--	--	153	153	3,940	28,800	0.865	0.842	1	--	--	No	No	Not different from reference or background
Antimony	21	4	0.172	3	50	2	[0.2]	[0.66]	--	--	0.571	0.1067	Equal	78	8	[11.8]	[29.1]	--	--	1	0.472	Equal	No	No	Not different from reference or background
Arsenic	87	72	0.83	20.9	50	50	1.6	4.4	0.039	<0.001	<0.001	--	--	150	133	3	27.7	0.98	0.334	1	0.278	Equal	See Table 4-30	Yes	Greater than reference, not different from background
Barium	40	40	50	166	50	50	48.6	134	0.856	0.953	0.444	--	--	153	153	45.2	294	0.99	0.984	1	--	--	No	No	Not different from reference or background
Beryllium	45	45	0.144	0.65	50	48	[0.005]	0.77	0.997	1	1	--	--	150	137	[0.46]	2.5	1	1	1	--	--	No	No	Not different from reference or background
Cadmium	44	15	[0.029]	1	50	17	[0.03]	0.24	--	0.961	0.003	0.835	Equal	150	5	0.61	2.9	--	--	1	<0.001	Greater	See Table 4-30	Yes	Greater than reference based on 1 of 3 tests; greater than background based on 1 of 2 tests
Calcium	21	21	3,120	14,400	50	50	2,820	9,000	No test	No test	No test	No test	No test	153	153	2,880	86,600	No test	No test	No test	No test	No test	No	No	Essential nutrient
Calculated total uranium	134	133	[0.539]	363	50	27	[0.0834]	1.18	<0.001	<0.001	<0.001	<0.001	Greater	47	47	1.06	3.63	<0.001	<0.001	<0.001	--	--	Yes	No	Greater than reference, greater than background
Chromium	44	44	3.9	53.6	50	50	4.5	14.4	0.221	0.004	<0.001	--	--	153	153	2.9	33.2	0.359	0.218	<0.001	--	--	See Table 4-30	Yes	Greater than reference based on 2 of 3 tests; greater than background based on 1 of 3 tests
Cobalt	21	21	6.3	11.7	50	50	6	12.5	0.777	0.929	1	--	--	151	151	5.7	26	1	1	1	--	--	No	No	Not different from reference or background
Copper	21	21	9.1	2,400	50	50	10.3	22.1	0.339	0.003	<0.001	--	--	153	153	8.1	40.3	0.137	0.002	<0.001	--	--	See Table 4-30	Yes	Greater than background and reference based on 2 of 3 tests
Iron	21	21	17,200	32,200	50	50	17,200	28,900	0.992	0.996	0.296	--	--	153	153	12,300	53,600	0.992	0.993	1	--	--	No	No	Not different from reference or background
Lead	54	54	2.4	120	50	50	3.6	9.1	0.181	<0.001	<0.001	--	--	153	153	1.1	74.1	0.099	0.04	0.067	--	--	See Table 4-30	Yes	Greater than reference based on 2 of 3 tests; greater than background based on 1 of 3 tests
Magnesium	21	21	3,550	8,070	50	50	3,500	6,370	No test	No test	No test	No test	No test	153	153	2,900	10,500	No test	No test	No test	No test	No test	No	No	Essential nutrient
Manganese	21	21	259	464	50	50	280	567	1	1	1	--	--	153	153	196	1,100	0.995	0.993	1	--	--	No	No	Not different from reference or background
Mercury	9	9	0.39	1.8	50	2	[0.0189]	[0.025]	--	<0.001	<0.001	--	--	151	30	0.1	3.8	--	<0.001	1	--	--	See Table 4-30	Yes	Greater than reference, greater than background based on 1 of 2 tests
Nickel	21	21	8.5	136	50	50	7.4	16.9	0.004	0.003	<0.001	--	--	153	152	6.5	31.3	0.03	0.008	<0.001	--	--	Yes	No	Greater than reference, greater than background
Potassium	21	21	813	2,370	50	50	779	2,540	No test	No test	No test	No test	No test	150	150	851	7,900	No test	No test	No test	No test	No test	No	No	Essential nutrient
Selenium	22	10	[0.329]	[4.58]	50	0	[0.17]	[0.71]	--	--	--	<0.001	Greater	125	8	0.96	6	--	--	1	<0.001	Greater	See Table 4-30	Yes	Greater than reference, 1 test; greater than background based on 1 of 2 tests
Silver	22	17	[0.045]	19	50	0	[0.07]	[0.218]	--	<0.001	--	<0.001	Greater	150	49	[1.4]	14.6	--	<0.001	0.128	<0.001	Greater	See Table 4-30	Yes	Greater than reference, greater than background based on 2 of 3 tests
Sodium	21	21	127	312	50	50	84.7	247	No test	No test	No test	No test	No test	150	149	[101]	6,060	No test	No test	No test	No test	No test	No	No	Essential nutrient
Thallium	71	14	[0.278]	[7.8]	50	0	[0.3]	[1.1]	--	--	--	0.002	Greater	151	6	0.61	[3.7]	--	--	0.249	<0.001	Greater	See Table 4-30	Yes	Greater than reference, 1 test; greater than background based on 1 of 2 tests
Vanadium	21	21	41.1	70.3	50	50	37.7	71.6	0.986	0.859	1	--	--	153	153	24.3	105	0.909	1	1	--	--	No	No	Not different from reference or background
Zinc	21	21	35.9	112	50	50	36.1	58.4	0.24	0.009	0.006	--	--	153	153	24.2	366	0.682	0.825	1	--	--	See Table 4-30	Yes	Not different from background, greater than reference based on 2 of 3 tests

Table 5-19. Summary of Statistical Comparisons to Reference and Background for 300 Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Organics (mg/kg)																									
1,1,2,2-Tetrachloroethane	3	3	0.1	0.14	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	No reference data; no background data
2-ButoxyethaNol	1	1	0.24	0.24	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	No reference data; no background data
Aroclor-1242	105	1	[0.013]	[0.18]	50	0	[0.013]	[0.013]	--	--	--	0.703	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	Not different from reference, 1 test
Aroclor-1248	105	8	[0.013]	3	50	0	[0.013]	[0.013]	--	--	--	0.106	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	Not different from reference, 1 test
Aroclor-1254	105	26	[0.013]	0.405	50	0	[0.013]	[0.013]	--	--	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	Greater than reference, 1 test
Aroclor-1260	105	4	[0.013]	[0.18]	50	0	[0.013]	[0.013]	--	--	--	0.392	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	Not different from reference, 1 test
Benzo[a]anthracene	29	1	[0.02]	[0.38]	50	7	0.00083	0.0037	--	--	0.02	0.266	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	Greater than reference based on 1 of 2 tests
Bis[2-ethylhexyl] phthalate	48	34	0.0193	[0.37]	50	38	0.017	[0.33]	0.051	0.015	0.253	0.726	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	Greater than reference based on 1 of 4 tests
Butylbenzyl phthalate	40	17	[0.02]	[0.38]	50	0	[0.33]	[0.34]	--	--	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	Greater than reference, 1 test
Chrysene	67	1	[0.02]	[0.41]	50	17	0.00095	0.01	--	--	0.02	<0.001	Less	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	Greater than reference based on 1 of 2 tests
Di-n-butylphthalate	33	5	[0.02]	[0.38]	50	11	0.02	[0.34]	--	0.855	0.045	0.624	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	Greater than reference based on 1 of 3 tests
Heptachlor epoxide	9	2	[0.0017]	0.0032	50	0	[4E-006]	[0.0013]	--	--	--	0.017	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	Greater than reference, 1 test
Heptacosane	1	1	0.25	0.25	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	No reference data; no background data
Heptadecane	1	1	0.4	0.4	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	No reference data; no background data
Hexadecanoic acid [9CI]	13	13	0.14	0.83	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	No reference data; no background data
Octacosane	1	1	0.26	0.26	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	No reference data; no background data
Octadecanoic acid	1	1	0.091	0.091	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	No reference data; no background data
Phenol	28	1	[0.02]	[0.38]	50	1	0.0184	[0.34]	--	--	0.5	0.745	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Radionuclides (pCi/g)																									
Americium-241	73	3	[0]	0.479	60	3	[-0.025]	[0.4]	--	--	0.051	0.862	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Cesium-137	112	40	[-0.0104]	2.9	60	22	0.052	0.492	--	0.296	0.003	0.966	Equal	55	55	-0.0017	1.78	--	1	0.199	--	--	See Table 4-30	Yes	Not different from background, greater than reference based on 1 of 3 tests
Cobalt-60	112	23	[-0.0161]	7.2	50	0	[0.054]	[0.18]	--	--	--	0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	Greater than reference, 1 test
Gross alpha	2	2	58.7	62.7	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	No reference data; no background data
Gross beta	2	2	53.3	67.6	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-30	Yes	No reference data; no background data
Potassium-40	109	108	[0.27]	16.3	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-224	38	38	0.485	1.08	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide

Table 5-19. Summary of Statistical Comparisons to Reference and Background for 300 Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Radium-226	108	108	0.274	1.6	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-228	108	106	0.409	1.14	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Strontium-90	5	1	[-0.046]	0.297	60	4	[-0.086]	1.5	--	--	1	0.84	Equal	28	28	0.008	0.348	--	0.66	1	--	--	No	No	Not different from reference or background
Thorium-228	69	69	0.426	0.996	50	37	[0.191]	0.945	No test	No test	No test	No test	No test	49	49	0.529	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-232	69	69	0.409	1.06	50	41	[0.079]	0.891	No test	No test	No test	No test	No test	49	49	0.468	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-234	6	6	18	75	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Short half-life
Uranium-233/234	134	133	[0.183]	172	50	28	[0]	0.505	<0.001	<0.001	<0.001	<0.001	Greater	92	92	0.286	1.51	<0.001	<0.001	<0.001	--	--	Yes	No	Greater than reference, greater than background
Uranium-235	144	87	[0]	18.6	50	0	[-0.017]	[0.093]	--	<0.001	--	<0.001	Greater	76	46	[0.00462]	0.386	<0.001	<0.001	<0.001	0.8972	Equal	See Table 4-30	Yes	Greater than reference, greater than background based on 3 of 4 tests
Uranium-238	134	133	[0.181]	119	50	27	[0.028]	0.397	<0.001	<0.001	<0.001	<0.001	Greater	92	92	0.297	1.23	<0.001	<0.001	<0.001	--	--	Yes	No	Greater than reference, greater than background

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
No bkg data = no background site data available
No ref data = no reference site data available
no test = no statistical test performed

Table 5-20. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-B/C Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Aroclor-1254	Yes	Reference uncertainty (fails one of one test); no background data. Not detected in reference area. Some detected values well above the range of nondetects (excepting four outlier nondetects of 0.76 mg/kg).
Beryllium	Yes	Reference uncertainty (fails three of four tests); not different from background (fails zero of four tests). Highest values are all associated with the 128-C-1 and 128-B-2 waste sites.
Boron	Yes	Reference uncertainty (fails two of four tests); no background data. Range of site results clearly exceeds reference area, no background data available for comparison. Concentrations in three of four samples at the 118-B-9 waste site exceed the maximum detected value in the reference area.
Cadmium	Yes	Greater than reference sites (fails three of three tests); background uncertainty (fails two of three tests). Concentrations in a number of focused samples exceed Hanford and Washington regional background. Both site detect rate and concentrations exceed RCBRA reference.
Calculated total uranium	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Clearly different than reference area and an inclusion list analyte.
Cesium-137	Yes	Reference uncertainty (fails one of three tests); not different from background (fails zero of two tests). The range of detected values exceeds both reference area and Hanford background. Many of the highest values are at the 116-B-6A waste site. Inclusion list analyte.
Chromium	Yes	Greater than reference sites (fails three of three tests); background uncertainty (fails one of three tests). The range of detected values exceeds reference area range. Several of the highest values are at the 100-B-8:2 waste site. Inclusion list analyte.
Cobalt-60	Yes	Reference uncertainty (fails zero of one test); no background data. Not detected in reference area soil samples. Inclusion list analyte.
Copper	Yes	Reference uncertainty (fails one of three tests); background uncertainty (fails one of three tests). Failed only slippage test for comparing highest values. The seven highest values are from the 128-C-1 waste site.
DDE	Yes	Reference uncertainty (fails zero of one test); no background data. Detected values exceed all but two sample-specific reporting limits and are localized at the 1607-B8 and 1607-B10 waste sites.
Europium-154	Yes	Reference uncertainty (fails zero of one test); no background data. A likely COPC at the 116-C-5 waste site (detected in three of seven samples at concentrations above minimal detectable activity in the remaining four samples).
Hexavalent chromium	Yes	Reference uncertainty (fails one of two tests); no background data. Failed slippage test for comparing highest values. Many of the highest values are from the 116-B-1 and 100-B-8:2 waste sites. Inclusion list analyte.
Lead	Yes	Reference uncertainty (fails one of three tests); not different from background (fails zero of three tests). The range of detected values greatly exceeds reference area values. Inclusion list analyte.
Mercury	Yes	Greater than reference sites (fails three of three tests); background uncertainty (fails one of three tests). The range of detected values greatly exceeds reference area values. Inclusion list analyte.
Nickel-63	Yes	No reference data; no background data. The 118-C-2 and 118-B-10 waste sites have disproportionally many higher values. Data are uncensored.
Plutonium-239/240	Yes	Not different from reference sites (fails zero of two tests); background uncertainty (fails one of two tests). Range of detected concentrations exceeds both reference area and Hanford background. The 116-C-6 waste site has disproportionally many higher values. Inclusion list analyte.

Table 5-20. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-B/C Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Strontium-90	Yes	Not different from reference sites (fails zero of two tests); not different from background (fails zero of two tests). Many of the highest concentrations are from the 116-B-6A and 100-B-8:2 waste sites. The mean concentration of 1.55 pCi/g at 116-B-6A is well above the range of all Hanford background data and all but one outlier result in the reference area. Inclusion list analyte.
Uranium-233/234	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Uranium-235	Yes	Reference uncertainty (fails one of one test); not different from background (fails zero of two tests). Not detected in the reference area. Other isotopes clearly elevated in concentration. Inclusion list analyte.
Uranium-238	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Zinc	Yes	Reference uncertainty (fails one of three tests); not different from background (fails zero of three tests). Failed slippage test for comparing highest values. The 118-B-9 waste site has disproportionally many higher values.
Acetone	No	No reference data; no background data. Detected at 0.003 mg/kg. Common lab contaminant and not persistent in the environment.
Anthracene	No	Reference uncertainty (fails two of two tests); no background data. Detection frequency below 5%. The two detected values (maximum of 0.047 mg/kg) are well below the nominal detection limit of 0.35 mg/kg.
Antimony	No	Reference uncertainty (fails one of two tests); background uncertainty (fails one of two tests). All but one detect are within the range of nondetects. No pattern of detects or higher concentrations at an individual waste site.
Aroclor-1260	No	Reference uncertainty (fails zero of one test); no background data. Detection frequency is less than 5%; detected values are at different waste sites and within the range of nondetects.
Arsenic	No	Reference uncertainty (fails one of three tests); not different from background (fails zero of four tests). The only test failed was the Slippage test for reference area. The higher site values are not clustered at any individual waste site.
Benzo[a]anthracene	No	Reference uncertainty (fails one of two tests); no background data. All detected values are J-qualified between 0.02 and 0.3 mg/kg. The nominal detection limit is 0.35 mg/kg.
Benzo[a]pyrene	No	Reference uncertainty (fails one of two tests); no background data. All detected values are J-qualified between 0.02 and 0.2 mg/kg. The nominal detection limit is 0.35 mg/kg.
Benzo[b]fluoranthene	No	Reference uncertainty (fails one of two tests); no background data. All detected values are J-qualified between 0.03 and 0.2 mg/kg. The nominal detection limit is 0.35 mg/kg.
Benzo[ghi]perylene	No	Reference uncertainty (fails one of two tests); no background data. All detected values are J-qualified between 0.02 and 0.1 mg/kg. The nominal detection limit is 0.35 mg/kg.
Benzo[k]fluoranthene	No	Reference uncertainty (fails one of two tests); no background data. All detected values are J-qualified between 0.02 and 0.2 mg/kg. The nominal detection limit is 0.35 mg/kg.
beta-1,2,3,4,5,6-Hexachlorocyclohexane	No	Reference uncertainty (fails zero of one test); no background data. The single detected value is within the range of nondetects.

Table 5-20. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-B/C Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Butylbenzylphthalate	No	Reference uncertainty (fails zero of one test); no background data. Detected concentrations are within the range of nondetects; phthalates are common lab contaminants.
Carbazole	No	Reference uncertainty (fails zero of one test); no background data. Detection frequency is less than 5%; detected values are below the range of nondetects.
Chrysene	No	Reference uncertainty (fails one of three tests); no background data. All but one detected value (0.34 mg/kg at the 600-233 waste site) are J-qualified and between 0.02 and 0.24 mg/kg. The nominal detection limit is approximately 0.35 mg/kg.
Dibenz[a,h]anthracene	No	Reference uncertainty (fails zero of one test); no background data. Detection frequency below 5%. The two detected values (maximum of 0.061[J] mg/kg) are well below the nominal detection limit of 0.35 mg/kg.
Dieldrin	No	Reference uncertainty (fails zero of one test); no background data. Detected in two of sample samples at the 1607-B9 waste site. Detected values of 0.0046 and 0.0043 mg/kg approximately equal to common detection limit of 0.0035 mg/kg.
Di-n-butylphthalate	No	Reference uncertainty (fails one of three tests); no background data. Detected concentrations are within the range of nondetects; phthalates are common lab contaminants.
Di-n-octylphthalate	No	Reference uncertainty (fails zero of one test); no background data. Detected concentrations are within the range of nondetects; phthalates are common lab contaminants.
Endrin aldehyde	No	Reference uncertainty (fails one of two tests); no background data. Detection frequency below 5%. The single detected value of 0.007 (JD) mg/kg is about twice the nominal detection limit of 0.0035 mg/kg.
Fluoranthene	No	Reference uncertainty (fails one of two tests); no background data. All but two detected results (0.69 mg/kg at the 600-233 waste site and 0.52 mg/kg at 600-232) are J-qualified and between 0.02 and 0.3 mg/kg. The nominal detection limit is approximately 0.35 mg/kg.
gamma-Chlordane	No	Reference uncertainty (fails zero of one test); no background data. The single detect of 0.24 mg/kg at the 128-B-2 waste site is 1 of 22 samples, the remainder of which are all nondetects.
Gross alpha	No	No reference data; no background data. No toxicity criteria; specific nuclides are evaluated.
Gross beta	No	No reference data; no background data. No toxicity criteria; specific nuclides are evaluated.
Indeno[1,2,3-cd]pyrene	No	Reference uncertainty (fails one of two tests); no background data. All detected values are J-qualified between 0.02 and 0.1 mg/kg. The nominal detection limit is 0.35 mg/kg.
Methylenechloride	No	No reference data; no background data. A common lab contaminant, the range of detected concentrations (0.005-0.016 mg/kg) was within the range of nondetects (0.007-0.024 mg/kg) in the 100-B/C and 100-F/100-IU-2/100-IU-6 data sets.
Molybdenum	No	Reference uncertainty (fails one of three tests); background uncertainty (fails two of three tests). Range of detected values only slightly higher than in RCBRA reference area. Higher results not associated with any individual waste site.
Pentachlorophenol	No	Reference uncertainty (fails one of two tests); no background data. The single detected value is well below the range of detection limits.
Phenanthrene	No	Reference uncertainty (fails one of three tests); no background data. All but one detected value (0.34 mg/kg at the 600-233 waste site) are J-qualified and between 0.02 and 0.14 mg/kg. The nominal detection limit is approximately 0.35 mg/kg.

Table 5-20. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-B/C Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Pyrene	No	Reference uncertainty (fails one of three tests); no background data. All but two detected results (0.51 mg/kg at the 600-233 waste site and 0.54J mg/kg at 600-232) are J-qualified and between 0.02 and 0.3 mg/kg. The nominal detection limit is approximately 0.35 mg/kg.
Selenium	No	Reference uncertainty (fails zero of one test); not different from background (fails zero of two tests). Only one detection in reference area, but site concentrations are consistent with Hanford background. Detected concentrations within or very slightly above the range of nondetect values.
Silver	No	Reference uncertainty (fails zero of one test); not different from background (fails zero of three tests). All but two detects (the 128-C-1 waste site) are within the range of nondetects. There are 23 silver results at 128-C-1; 21 are either nondetect or within the range of detection limits.
Toluene	No	No reference data; no background data. A common lab contaminant, the range of detected concentrations (0.001-0.007 mg/kg) was comparable to the range of nondetects (0.004-0.006 mg/kg) in the 100-B/C and 100-F/100-IU-2/100-IU-6 data sets.
Total petroleum hydrocarbons	No	No reference data; no background data. No toxicity data for this analyte. Toxicity is addressed by analysis of the PAH constituents of petroleum hydrocarbons.

COPC = contaminant of potential concern
J = estimate
PAH = polycyclic aromatic hydrocarbons
RCBRA = River Corridor Baseline Risk Assessment

Table 5-21. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-K Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Arsenic	Yes	Reference uncertainty (fails one of three tests); not different from background (fails zero of three tests). The four highest results are at the 100-K-33 waste site; these values are near or above the range of values measured in reference area soil.
Cadmium	Yes	Not different from reference sites (fails zero of three tests); background uncertainty (fails one of two tests). The three highest results are at the 100-K-30 waste site; these values are near or above the range of values measured in reference area soil.
Calculated total uranium	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Cesium-137	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). Range of results exceeds reference area range. A disproportionally large number of the higher values are at the 116-K-2 waste site. Inclusion list analyte.
Chromium	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). Background comparison tests with reference area data indicate higher concentrations in site data. Inclusion list analyte. Known releases of chromium in the 100-K Area.

Table 5-21. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-K Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Cobalt-60	Yes	Reference uncertainty (fails one of one test); no background data. Not detected in the reference area. A disproportionally large number of the higher values are at the 116-KW-3 and 100-K-56:1 waste sites. Inclusion list analyte.
Ethylene glycol	Yes	No reference data; no background data. Detected in one of one shallow zone sample at 116-KE-5 (59.04 mg/kg). One other sample was analyzed for ethylene glycol (10 U mg/kg at 16-KW-4). Identified as a COPC because the detected concentration is relatively high and there is only a single sample at the 116-KE-5 waste site.
Europium-154	Yes	Reference uncertainty (fails one of one test); no background data. Not detected in reference area soil. A disproportionally large number of the higher detected values are at the 116-KW-3 waste site. All nondetect values are censored.
Hexavalent chromium	Yes	Reference uncertainty (fails one of three tests); no background data. A disproportionally large number of the higher detected values are at the 116-KE-4 waste site. Inclusion list analyte. Known releases of chromium in the 100-K Area.
Lead	Yes	Greater than reference sites (fails three of three tests); background uncertainty (fails two of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Nickel-63	Yes	No reference data; no background data. The 116-KE-4 waste site has disproportionally many higher values. Data are uncensored.
Strontium-90	Yes	Reference uncertainty (fails one of two tests); greater than background (fails two of two tests). The range of concentrations is well above the range of all Hanford background data and all but one outlier result in the reference area. The five highest results are at the 116-K-1 waste site. Inclusion list analyte.
Uranium-233/234	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Uranium-238	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Benzo[a]anthracene	No	Reference uncertainty (fails one of one test); no background data. The detected value of 0.051 (J) mg/kg is well below the nominal detection limit of 0.35 mg/kg observed in other CVP-RSVP samples.
Benzo[a]pyrene	No	Reference uncertainty (fails one of one test); no background data. The detected value of 0.10 (J) mg/kg is well below the nominal detection limit of 0.35 mg/kg observed in other CVP-RSVP samples.
Benzo[b]fluoranthene	No	Reference uncertainty (fails one of one test); no background data. The detected value of 0.075 (J) mg/kg is well below the nominal detection limit of 0.35 mg/kg observed in other CVP-RSVP samples.
Benzo[ghi]perylene	No	Reference uncertainty (fails one of one test); no background data. The detected value of 0.033 (J) mg/kg is well below the nominal detection limit of 0.35 mg/kg observed in other CVP-RSVP samples.
Benzo[k]fluoranthene	No	Reference uncertainty (fails zero of one test); no background data. The detected value of 0.078 (J) mg/kg is well below the nominal detection limit of 0.35 mg/kg observed in other CVP-RSVP samples.

Table 5-21. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-K Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Carbon-14	No	No reference data; no background data. The detected value (2.98 pCi/g) is the only detect among 24 shallow zone C-14 samples at 116-K-2. The detected value is within the range of nondetect values.
Chrysene	No	Reference uncertainty (fails one of two tests); no background data. The detected value of 0.15 (J) mg/kg is below the nominal detection limit of 0.35 mg/kg observed in other CVP-RSVP samples.
Fluoranthene	No	Reference uncertainty (fails one of one test); no background data. The detected value of 0.22 (J) mg/kg is below the nominal detection limit of 0.35 mg/kg observed in other CVP-RSVP samples.
Indeno[1,2,3-cd]pyrene	No	Reference uncertainty (fails one of one test); no background data. The detected value of 0.029 (J) mg/kg is well below the nominal detection limit of 0.35 mg/kg observed in other CVP-RSVP samples.
Phenanthrene	No	Reference uncertainty (fails one of two tests); no background data. The detected value of 0.046 (J) mg/kg is well below the nominal detection limit of 0.35 mg/kg observed in other CVP-RSVP samples.
Pyrene	No	Reference uncertainty (fails one of two tests); no background data. The detected value of 0.15 (J) mg/kg is below the nominal detection limit of 0.35 mg/kg observed in other CVP-RSVP samples.
Sulfate	No	Reference uncertainty (fails two of three tests); background uncertainty (fails two of three tests). No toxicity criteria, evaluated in toxicity assessment.
Uranium-235	No	Reference uncertainty (fails zero of one test); not different from background (fails zero of three tests). Less than 5% detection frequency. Positively detected values are within the range of minimal detectable activity in other samples. About 50% of the data are censored.

COPC = contaminant of potential concern
CVP = cleanup verification package
J = estimate
RSVP = remaining sites verification package

Table 5-22. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-N Record of Decision Decision Area Shallow Zone Soil Data. (2 Pages)

Analyte	COPC?	Explanation
Mercury	Yes	Not different from reference sites (fails zero of two tests); not different from background (fails zero of two tests). Two of two samples at the 120-N-1 waste site were detects. The higher result of 0.04 mg/kg is twice the nominal detection limit of 0.02 mg/kg and above the two detects in the reference area data set. Inclusion list analyte.
Nitrogen in nitrite and nitrate	Yes	Reference uncertainty (fails one of three tests); no background data. The upper range of the results is elevated relative to the reference area. Concentrations in the two samples at the 120-N-1 waste site (6.2 and 3.8 mg/kg) are above the range of reference area results.

Table 5-22. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-N Record of Decision Decision Area Shallow Zone Soil Data. (2 Pages)

Analyte	COPC?	Explanation
Cadmium	No	Reference uncertainty (fails one of three tests); not different from background (fails zero of two tests). The detected value of 0.53 mg/kg is approximately the same as the nondetect of 0.47 mg/kg. Both samples are from the 120-N-1 waste site.
Europium-155	No	Reference uncertainty (fails zero of one test); no background data. The detected value of 0.039 pCi/g is within the lower portion of the range of minimal detectable activities.
Gross beta	No	No reference data; no background data. No toxicity criteria; specific nuclides are evaluated.
Nitrogen in nitrate	No	Greater than reference sites (fails two of two tests); background uncertainty (fails one of two tests). The two "N in nitrate" results for the 120-N-1 waste site are slightly lower than the values for "N in nitrite and nitrate." The latter values are therefore used to quantify risks related to nitrate exposure.
Sulfate	No	Greater than reference sites (fails two of two tests); not different from background (fails zero of two tests). No toxicity criteria, evaluated in toxicity assessment.
Tritium	No	No reference data; no background data. Detected in only a single sample (0.26 [BJ] pCi/g) from among 38 shallow and deep zone samples at the 116-N-3 waste site.

B = blank
COPC = contaminant of potential concern
J = estimate

Table 5-23. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-D/100-H Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Aroclor-1260	Yes	Reference uncertainty (fails one of one test); no background data. Not detected in the reference area. Eight of the 10 highest results are at the 100-H-24 waste site.
Arsenic	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). The range of concentrations is clearly higher than reference area. Eight of the 10 highest values are at the 100-H-21 waste site.
Beryllium	Yes	Reference uncertainty (fails one of two tests); not different from background (fails zero of two tests). Both samples are from the 1607-D4 waste site. The concentrations appear elevated relative to the reference area and ROD areas 100-N, 100-F/100-IU-2/100-IU-6, and 300.
Calculated total uranium	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Cesium-137	Yes	Reference uncertainty (fails two of three tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.

Table 5-23. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-D/100-H Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Chromium	Yes	Reference uncertainty (fails one of three tests); not different from background (fails zero of three tests). Failed slippage test for comparing highest values. The 1607-H2 and 100-H-21 waste sites have disproportionally many higher values. Inclusion list analyte.
Cobalt-60	Yes	Reference uncertainty (fails zero of one test); no background data. Six of the 10 highest values are at the 118-DR-2:2 waste site. Inclusion list analyte.
Hexavalent chromium	Yes	Reference uncertainty (fails one of three tests); no background data. Failed slippage test for comparing highest values. The 116-D-7 and 116-H-7 waste sites have disproportionally many higher values. Inclusion list analyte. Known releases of hexavalent chromium in the 100-D Area.
Lead	Yes	Reference uncertainty (fails two of three tests); background uncertainty (fails one of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Mercury	Yes	Not different from reference sites (fails zero of two tests); not different from background (fails zero of two tests). At the 1607-H2 waste site, the average mercury concentration is 0.52 mg/kg. This is well above the two detects in the reference area and also exceeds the 90th percentile of Hanford background (0.33 mg/kg). Inclusion list analyte.
Nickel-63	Yes	No reference data; no background data. The 116-D-7 and 116-DR-9 waste sites have disproportionally many higher values. Data are uncensored.
Plutonium-239/240	Yes	Not different from reference sites (fails zero of two tests); background uncertainty (fails one of two tests). The range of concentrations are clearly elevated above reference area and Hanford background data. Four of the five highest concentrations are at the 118-DR-2:2 and 116-DR-9 waste sites. Inclusion list analyte.
Strontium-90	Yes	Not different from reference sites (fails zero of two tests); not different from background (fails zero of two tests). At the 116-H-1 waste site, the average concentration is 0.52 pCi/g. This exceeds the 90th percentile of Hanford background (0.18 mg/kg) and all but one outlier result in the reference area. Inclusion list analyte.
Technetium-99	Yes	No reference data; no background data. Eleven of the 12 highest results are at the 100-H-21 and 118-DR-2:2 waste sites. Data are uncensored.
Uranium (inorganic)	Yes	Reference uncertainty (fails zero of one test); no background data. Calculated total uranium results are used for all waste sites except 1607-D4, where inorganic uranium results were obtained but no isotopic uranium data are available.
Uranium-233/234	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Uranium-235	Yes	Reference uncertainty (fails one of one test); not different from background (fails zero of three tests). Not detected in the reference area. Inclusion list analyte.
Uranium-238	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Aroclor-1254	No	Reference uncertainty (fails zero of one test); no background data. Detection frequency of less than 5%. No individual waste site is associated with consistently higher values.
Benzo[a]anthracene	No	Reference uncertainty (fails one of two tests); no background data. The three detected values (maximum of 0.066 [J] mg/kg) are well below the nominal detection limit of 0.35 mg/kg.

Table 5-23. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-D/100-H Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Benzo[a]pyrene	No	Reference uncertainty (fails one of three tests); no background data. The two detected values (maximum of 0.03 [J] mg/kg) are well below the nominal detection limit of 0.35 mg/kg.
Benzo[b]fluoranthene	No	Reference uncertainty (fails one of three tests); no background data. The two detected values (maximum of 0.036 [J] mg/kg) are well below the nominal detection limit of 0.35 mg/kg.
Benzo[k]fluoranthene	No	Reference uncertainty (fails one of two tests); no background data. The two detected values (maximum of 0.025 [J] mg/kg) are well below the nominal detection limit of 0.35 mg/kg.
Cadmium	No	Not different from reference sites (fails zero of three tests); background uncertainty (fails one of two tests). Failed only the chi-square test comparing detection frequency. Concentrations not different than reference area or Hanford background.
Chrysene	No	Reference uncertainty (fails one of three tests); no background data. The single detected value is below the range of nondetects.
Di-n-butylphthalate	No	Reference uncertainty (fails one of three tests); no background data. Detected concentrations (0.025 [J] - 0.092 [J] mg/kg) well below range of detection limits (0.33 mg/kg and higher). Phthalates are common lab contaminants.
Europium-154	No	Reference uncertainty (fails zero of one test); no background data. Detection frequency of less than 5%. All nondetects are censored. No individual waste site is associated with consistently higher values.
Fluoranthene	No	Reference uncertainty (fails one of two tests); no background data. The three detected values (maximum of 0.023 [J] mg/kg) are well below the nominal detection limit of 0.35 mg/kg.
Gross alpha	No	No reference data; no background data. No toxicity criteria; specific nuclides are evaluated.
Gross beta	No	No reference data; no background data. No toxicity criteria; specific nuclides are evaluated.
Lithium	No	Reference uncertainty (fails two of three tests); not different from background (fails zero of two tests). The range of site data is slightly elevated relative to reference area results, but well below Hanford background data.
Molybdenum	No	Not different from reference sites (fails zero of two tests); background uncertainty (fails zero of one test). The detected values are within the range of reference area results and below Hanford background data detects.
Phenanthrene	No	Reference uncertainty (fails one of three tests); no background data. The single detected value of 0.02 (J) mg/kg is well below the nominal detection limit of 0.35 mg/kg.
Pyrene	No	Reference uncertainty (fails one of three tests); no background data. The three detected values (maximum of 0.1 [J] mg/kg) are below the nominal detection limit of 0.35 mg/kg.

COPC = contaminant of potential concern
J = estimate
ROD = record of decision

Table 5-24. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Aroclor-1254	Yes	Reference uncertainty (fails one of one test); no background data. Not detected in the reference area. Detected in two of six samples at the 1607-F6 waste site at concentrations above the range of all but three nondetects. Detected in three of three samples at the 600-23 waste site.
Aroclor-1260	Yes	Reference uncertainty (fails one of one test); no background data. Not detected in the reference area. The five highest detected concentrations are at the 118-F-8:1 waste site.
Arsenic	Yes	Reference uncertainty (fails one of three tests); background uncertainty (fails one of four tests). Eighteen of the 20 highest results are at the 116-F-1 waste site.
Barium	Yes	Reference uncertainty (fails one of three tests); not different from background (fails zero of three tests). Failed slippage test for comparing highest values. The 100-F-38 waste site has disproportionally many higher values. The highest value (508 mg/kg) is the only sample result at the 100-F-37 waste site.
Boron	Yes	Reference uncertainty (fails one of three tests); no background data. No background data available for comparison. Concentrations in three of three samples at the 100-F-38 waste site exceed the maximum detected value in the reference area.
Cadmium	Yes	Reference uncertainty (fails two of three tests); background uncertainty (fails one of two tests). Failed slippage test for comparing highest values. The 116-F-5 waste site has disproportionally many higher values. The second-highest value (0.71 mg/kg) is the only sample result at the 100-F-37 waste site.
Calculated total uranium	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Carbon-14	Yes	No reference data; no background data. Detected in 2 of 10 samples at 100-F-19:1 at concentrations slightly above the range of nondetect values. Present in deep zone soil samples in the 100-F Area.
Cesium-137	Yes	Not different from reference sites (fails zero of three tests); not different from background (fails zero of two tests). At the 116-F-10 and 116-F-14 waste sites, average concentrations (0.45 and 0.54 pCi/g) are approximately equal to the maximum detected value in the reference area data. Inclusion list analyte.
Chromium	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). The range of detected values exceeds reference area range. Several of the highest values are at the 116-F-14 and 118-F-8:1 waste sites. Inclusion list analyte.
Europium-152	Yes	Reference uncertainty (fails one of one test); no background data. Not detected in reference area soil. Inclusion list analyte.
Fluoride	Yes	Greater than reference sites (fails two of two tests); background uncertainty (fails one of two tests). The values are above the range of reference area results and greater than all but a few of the 150 detects in the Hanford Area background data.
Hexavalent chromium	Yes	Reference uncertainty (fails one of three tests); no background data. Failed slippage test for comparing highest values. The 116-F-1 and 118-F-8:1 waste sites have disproportionally many higher values. Inclusion list analyte.
Lead	Yes	Reference uncertainty (fails one of three tests); not different from background (fails zero of three tests). Failed slippage test for comparing highest values. The highest value result at the 100-F-37 waste site (214 mg/kg) is the only sample. Inclusion list analyte.
Mercury	Yes	Greater than reference sites (fails two of two tests); not different from background (fails zero of three tests). Higher detection frequency than reference area and failed reference area slippage test for comparing highest values. Inclusion list analyte.

Table 5-24. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Nickel-63	Yes	No reference data; no background data. The 100-F-19:2 waste site has disproportionally many higher values. Data are uncensored.
Strontium-90	Yes	Not different from reference sites (fails zero of two tests); not different from background (fails zero of two tests). At the 116-F-9 and 116-F-6 waste sites, average concentrations (0.89 and 0.57 pCi/g) exceed the maximum detected value in upland reference area data and are well above the 90th percentile of Hanford background (0.18 mg/kg). Inclusion list analyte.
Uranium-233/234	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Uranium-238	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Concentrations clearly elevated above reference area. Inclusion list analyte.
Acenaphthene	No	Reference uncertainty (fails zero of one test); no background data. One of 13 PAH at the 600-235 waste site detected at concentrations between 0.62 and 6.8 mg/kg in focused sample J01T79. JJ01T79 is one of seven focused samples at 600-235. Not detected above the nominal detection limit of approximately 0.35 mg/kg in any other shallow soil sample in 100-F/100-IU-2/100-IU-6.
Acenaphthylene	No	Reference uncertainty (fails zero of one test); no background data. Detected in one sample from the 600-190 waste site. Detected concentration is below the range of nondetect values.
Aroclor-1248	No	Reference uncertainty (fails zero of one test); no background data. Detected in only 1 of 16 statistical samples at the 118-F-8:1 waste site.
Benzene	No	No reference data; no background data. Detected in two samples at 600-23 (both at 0.002 mg/kg [JB]). This is value is below the range of detection limits (0.005 - 0.01 mg/kg) for the other benzene soil samples.
Benzo[a]anthracene	No	Reference uncertainty (fails one of two tests); no background data. One of 13 PAH at the 600-235 waste site detected at concentrations between 0.62 and 6.8 mg/kg in focused sample J01T79. JJ01T79 is one of seven focused samples at 600-235. Not detected above the nominal detection limit of approximately 0.35 mg/kg in any other shallow soil sample in 100-F/100-IU-2/100-IU-6.
Benzo[a]pyrene	No	Reference uncertainty (fails one of two tests); no background data. One of 13 PAH at the 600-235 waste site detected at concentrations between 0.62 and 6.8 mg/kg in focused sample J01T79. JJ01T79 is one of seven focused samples at 600-235. Not detected above the nominal detection limit of approximately 0.35 mg/kg in any other shallow soil sample in 100-F/100-IU-2/100-IU-6.
Benzo[b]fluoranthene	No	Reference uncertainty (fails one of three tests); no background data. One of 13 PAH at the 600-235 waste site detected at concentrations between 0.62 and 6.8 mg/kg in focused sample J01T79. JJ01T79 is one of seven focused samples at 600-235. Not detected above the nominal detection limit of approximately 0.35 mg/kg in any other shallow soil sample in 100-F/100-IU-2/100-IU-6.
Benzo[ghi]perylene	No	Reference uncertainty (fails one of two tests); no background data. One of 13 PAH at the 600-235 waste site detected at concentrations between 0.62 and 6.8 mg/kg in focused sample J01T79. JJ01T79 is one of seven focused samples at 600-235. Not detected above the nominal detection limit of approximately 0.35 mg/kg in any other shallow soil sample in 100-F/100-IU-2/100-IU-6.
Benzo[k]fluoranthene	No	Reference uncertainty (fails one of two tests); no background data. One of 13 PAH at the 600-235 waste site detected at concentrations between 0.62 and 6.8 mg/kg in focused sample J01T79. JJ01T79 is one of seven focused samples at 600-235. Not detected above the nominal detection limit of approximately 0.35 mg/kg in any other shallow soil sample in 100-F/100-IU-2/100-IU-6.

Table 5-24. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Chloride	No	Greater than reference sites (fails two of two tests); not different from background (fails zero of two tests). No toxicity criteria; an essential dietary electrolyte.
Chrysene	No	Reference uncertainty (fails one of three tests); no background data. One of 13 PAH at the 600-235 waste site detected at concentrations between 0.62 and 6.8 mg/kg in focused sample J01T79. JJ01T79 is one of seven focused samples at 600-235. Not detected above the nominal detection limit of approximately 0.35 mg/kg in any other shallow soil sample in 100-F/100-IU-2/100-IU-6.
Cobalt-60	No	Reference uncertainty (fails zero of one test); no background data. Less than 5% detection frequency. Detected results not associated with any individual waste site and are within the range of minimal detectable activity for other samples. The majority of the data are censored.
Dibenz[a,h]anthracene	No	Reference uncertainty (fails zero of one test); no background data. Detected in two of seven samples at the 600-235 waste site at a maximum concentration of 0.24 mg/kg, which is below the nominal detection limit of approximately 0.35 mg/kg. Not detected in any other shallow soil sample in 100-F/100-IU-2/100-IU-6.
DDE	No	Reference uncertainty (fails zero of one test); no background data. The single detected concentration (0.0034 mg/kg) was well within the range of nondetect values, which approached 0.2 mg/kg.
Diethylphthalate	No	Reference uncertainty (fails zero of one test); no background data. The single detected value is below the range of nondetects.
Europium-154	No	Reference uncertainty (fails zero of one test); no background data. Detection frequency of less than 5%. All nondetects are censored. The two detects are within the range of minimal detectable activities and are from different waste sites.
Europium-155	No	Reference uncertainty (fails zero of one test); no background data. Detection frequency of less than 5%. The majority of nondetects are censored. The two detects are within the range of minimal detectable activities and are from different waste sites.
Fluoranthene	No	Reference uncertainty (fails one of two tests); no background data. One of 13 PAH at the 600-235 waste site detected at concentrations between 0.62 and 6.8 mg/kg in focused sample J01T79. JJ01T79 is one of seven focused samples at 600-235. Not detected above the nominal detection limit of approximately 0.35 mg/kg in any other shallow soil sample in 100-F/100-IU-2/100-IU-6.
Gross alpha	No	No reference data; no background data. No toxicity criteria; specific nuclides are evaluated.
Gross beta	No	No reference data; no background data. No toxicity criteria; specific nuclides are evaluated.
Indeno[1,2,3-cd] pyrene	No	Reference uncertainty (fails one of two tests); no background data. One of 13 PAH at the 600-235 waste site detected at concentrations between 0.62 and 6.8 mg/kg in focused sample J01T79. JJ01T79 is one of seven focused samples at 600-235. Not detected above the nominal detection limit of approximately 0.35 mg/kg in any other shallow soil sample in 100-F/100-IU-2/100-IU-6.
Methylenechloride	No	No reference data; no background data. A common lab contaminant, the range of detected concentrations (0.009-0.019 mg/kg) was within the range of common detection limits (0.01-0.02 mg/kg).
Molybdenum	No	Reference uncertainty (fails one of three tests); background uncertainty (fails two of three tests). The range of detected concentrations is below that observed in the reference area and Hanford background.

Table 5-24. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Shallow Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Pyrene	No	Reference uncertainty (fails one of three tests); no background data. One of 13 PAH at the 600-235 waste site detected at concentrations between 0.62 and 6.8 mg/kg in focused sample J01T79. JJ01T79 is one of seven focused samples at 600-235. Not detected above the nominal detection limit of approximately 0.35 mg/kg in any other shallow soil sample in 100-F/100-IU-2/100-IU-6.
Selenium	No	Reference uncertainty (fails zero of one test); not different from background (fails zero of two tests). Only one detection in reference area, but site concentrations are consistent with Hanford background. Detected concentrations within the range of nondetect values.
Silver	No	Reference uncertainty (fails zero of one test); not different from background (fails zero of three tests). Detection frequency of less than 5%. The single detected concentration is within the range of nondetect values.
Sulfate	No	Reference uncertainty (fails one of three tests); not different from background (fails zero of three tests). No toxicity criteria, evaluated in toxicity assessment.
Thallium	No	Reference uncertainty (fails one of one test); not different from background (fails zero of two tests). The detected concentration (0.44 mg/kg) is within the range of the detected values in Hanford Area background.
Toluene	No	No reference data; no background data. A common lab contaminant, the detected concentration (0.001 mg/kg) was below the range of nondetects (0.004-0.006 mg/kg) in the 100-B/C and 100-F/100-IU-2/100-IU-6 data sets.
Total petroleum hydrocarbons	No	No reference data; no background data. No toxicity data for this analyte. Toxicity is addressed by analysis of the PAH constituents of petroleum hydrocarbons.
Uranium-235	No	Reference uncertainty (fails zero of one test); not different from background (fails zero of three tests). Measured above minimal detectable activity in only one of six samples at the 1607-F6 waste site. The majority of the U-235 data in the 100-F/100-IU-2/100-IU-6 area are censored.

B = blank
COPC = contaminant of potential concern
DDE = dichlorodiphenyldichloroethylene
J = estimate
PAH = polycyclic aromatic hydrocarbon

Table 5-25. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 300 Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Aroclor-1248	Yes	Reference uncertainty (fails zero of one test); no background data. Not detected in reference area; detected values well above the range of nondetects.
Aroclor-1254	Yes	Reference uncertainty (fails one of one test); no background data. Not detected in reference area; detected values well above the range of nondetects.
Arsenic	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of four tests). Many of the highest results are from the 316-1 and 618-12 waste sites.
Cesium-137	Yes	Reference uncertainty (fails one of three tests); not different from background (fails zero of two tests). Higher values localized at the 316-5, 316-1, and 316-2 waste sites. Inclusion list analyte.

Table 5-25. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 300 Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Chromium	Yes	Reference uncertainty (fails two of three tests); background uncertainty (fails one of three tests). Higher values localized at the 316-1 waste site. Inclusion list analyte.
Cobalt-60	Yes	Reference uncertainty (fails one of one test); no background data. Not detected in reference area samples; inclusion list analyte.
Copper	Yes	Reference uncertainty (fails two of three tests); background uncertainty (fails two of three tests). Many values above the range of reference and background; very low p-values for quantile and slippage tests in both comparisons.
Lead	Yes	Reference uncertainty (fails two of three tests); background uncertainty (fails one of three tests). Higher values localized at the 316-1 and 628-4 waste sites. Inclusion list analyte.
Mercury	Yes	Greater than reference sites (fails two of two tests); background uncertainty (fails one of two tests). Clearly different than reference area results; inclusion list analyte. All samples from the 316-1 waste site.
Silver	Yes	Greater than reference sites (fails two of two tests); background uncertainty (fails two of three tests). Highest concentrations localized at the 316-1 waste site. These values are well above RCBRA upland soil levels.
Uranium-235	Yes	Greater than reference sites (fails two of two tests); background uncertainty (fails three of four tests). Clearly different than reference area and Hanford background; other uranium isotopes identified as COPCs based on statistical tests, inclusion list analyte.
Zinc	Yes	Reference uncertainty (fails two of three tests); not different from background (fails zero of three tests). Zinc data are from three waste sites; 8 of the 10 highest values are at the 316-1 waste site.
1,1,2,2-Tetrachloroethane	No	No reference area or background data. Detected in the three shallow zone samples at 316-5 (0.1 [BJN], 0.14 [BJN], and 0.14 [BJN] mg/kg), but lab qualifiers indicate these are estimated values (J) with contamination present in the blanks (B). The only other 300 Area data for this analyte are 10 deep zone soil samples at 618-4, where it was not detected. No plausible source term to support chronic exposure. No detections of known 300 Area groundwater VOC contaminants (TCE, PCE, cis-1,2-DCE) in deep zone soil (VOCs not analyzed in 300 Area shallow zone) as would be expected if process-related VOCs were present in soil. Detected results likely related to blank contamination, not identified as a COPC.
2-Butoxyethanol	No	No reference area or background data. Detected in the one shallow zone sample at 316-5 (0.24 [JN] mg/kg) where it was analyzed. No other samples were analyzed for this analyte in the CVP/RSVP data set. This compound is an ether of ethylene glycol and is subject to rapid environmental degradation. There is no plausible soil source term for chronic exposure. Not identified as a COPC.
Aroclor-1242	No	Reference uncertainty (fails zero of one test); no background data. Detection frequency is less than 5%; detected value is within the range of nondetects.
Aroclor-1260	No	Reference uncertainty (fails zero of one test); no background data. Detection frequency is less than 5%; detected values are at different waste sites and within the range of nondetects.
Benzo[a]anthracene	No	Reference uncertainty (fails one of two tests); no background data. This and chrysene were the only detected PAH in 300 Area samples. Both were detected in only a single sample.
Bis[2-ethylhexyl] phthalate	No	Reference uncertainty (fails one of four tests); no background data. Statistical significance of shift is not great; detected concentrations are within the range of nondetects; phthalates are common lab contaminants.

Table 5-25. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 300 Record of Decision Decision Area Shallow Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Butylbenzylphthalate	No	Reference uncertainty (fails one of one test); no background data. Detected concentrations are within the range of nondetects; phthalates are common lab contaminants.
Cadmium	No	Reference uncertainty (fails one of three tests); background uncertainty (fails one of two tests). The higher detected values are only slightly above the range of nondetects; higher values not localized at an individual waste site.
Chrysene	No	Reference uncertainty (fails one of two tests); no background data. This and benzo(a)anthracene were the only detected PAH in 300 Area samples. Both were detected in only a single sample.
Di-n-butylphthalate	No	Reference uncertainty (fails one of three tests); no background data. Statistical significance of slippage test shift is weak; detected concentrations are within the range of nondetects; phthalates are common lab contaminants.
Gross alpha	No	No reference data; no background data. No toxicity criteria; specific nuclides are evaluated.
Gross beta	No	No reference data; no background data. No toxicity criteria; specific nuclides are evaluated.
Heptachlor epoxide	No	Reference uncertainty (fails one of one test); no background data. Not detected in reference area background. Detected in 2 of 9 samples at 316-1; not detected in the other 90 CVP/RSVP shallow zone soil samples. Detected concentrations (0.0023 and 0.0032 mg/kg) are within the range of nondetect values. Not identified as a COPC.
Heptacosane	No	No reference data; no background data. No toxicity criteria.
Heptadecane	No	No reference data; no background data. No toxicity criteria.
Hexadecanoic acid [9CI]	No	No reference data; no background data. No toxicity criteria.
Octacosane	No	No reference data; no background data. No toxicity criteria.
Octadecanoic acid	No	No reference data; no background data. No toxicity criteria.
Selenium	No	Reference uncertainty (fails one of one test); background uncertainty (fails one of two tests). Range of detected concentrations similar to Hanford background and below Washington regional background levels.
Thallium	No	Reference uncertainty (fails one of one test); background uncertainty (fails one of two tests). Detected concentrations are within the range of nondetects in 100-N, RCBRA upland, and Hanford background data sets.

B = blank
COPC = contaminant of potential concern
CVP = cleanup verification package
DCE = dichloroethene
J = estimate
N = recovery is outside control limits
PAH = polycyclic aromatic hydrocarbon
PCE = tetrachloroethylene
RCBRA = River Corridor Baseline Risk Assessment
RSVP = remaining sites verification package
TCE = trichloroethene
VOC = volatile organic compound

Table 5-26. Summary of Contaminant of Potential Concern for Shallow Zone Soil Data. (3 Pages)

COPC	Number of Samples	Number of Detects
100-B/C ROD Area		
Aroclor-1254	91	18
Beryllium	54	53
Boron	54	41
Cadmium	122	72
Calculated total uranium	265	259
Cesium-137	331	161
Chromium	349	349
Cobalt-60	331	22
Copper	54	54
Dichlorodiphenyltrichloroethane	48	5
Europium-152	331	85
Europium-154	331	7
Hexavalent chromium	287	38
Lead	349	309
Mercury	344	104
Nickel-63	135	24
Plutonium-239/240	243	37
Strontium-90	248	32
Uranium-233/234	265	260
Uranium-235	331	33
Uranium-238	265	259
Zinc	54	54
100-K ROD Area		
Arsenic	19	19
Cadmium	19	11
Calculated total uranium	66	66
Cesium-137	118	85
Chromium	30	30
Cobalt-60	118	20
Ethylene glycol	2	1
Europium-152	118	73
Europium-154	118	17
Hexavalent chromium	96	39
Lead	22	22
Mercury	19	15
Nickel-63	40	10
Strontium-90	74	21
Uranium-233/234	66	66
Uranium-238	66	66
100-N ROD Area		
Cobalt-60	32	18
Mercury	22	2
Nitrogen in nitrite and nitrate	22	12

Table 5-26. Summary of Contaminant of Potential Concern for Shallow Zone Soil Data. (3 Pages)

COPC	Number of Samples	Number of Detects
100-D/100-H ROD Area		
Aroclor-1260	156	18
Arsenic	81	81
Beryllium	2	2
Calculated total uranium	218	216
Cesium-137	252	135
Chromium	101	101
Cobalt-60	252	19
Europium-152	252	89
Hexavalent chromium	262	40
Lead	126	126
Mercury	109	18
Nickel-63	108	5
Plutonium-239/240	234	21
Strontium-90	234	29
Technetium-99	48	3
Uranium (inorganic) pertains only to 1607-D4	2	2
Uranium-233/234	218	217
Uranium-235	244	25
Uranium-238	218	216
100-F/100-IU2/100-IU-6 ROD Area		
Aroclor-1254	59	9
Aroclor-1260	59	18
Arsenic	84	82
Barium	62	62
Boron	15	15
Cadmium	54	31
Calculated total uranium	20	19
Carbon-14	116	3
Cesium-137	183	74
Chromium	87	87
Europium-152	179	43
Fluoride	2	2
Hexavalent chromium	180	37
Lead	69	63
Mercury	54	12
Nickel-63	66	24
Strontium-90	107	17
Uranium-233/234	20	18
Uranium-238	20	19
300 ROD Area		
Aroclor-1248	105	8
Aroclor-1254	105	26

Table 5-26. Summary of Contaminant of Potential Concern for Shallow Zone Soil Data. (3 Pages)

COPC	Number of Samples	Number of Detects
Arsenic	87	72
Calculated total uranium	134	133
Cesium-137	112	40
Chromium	44	44
Cobalt-60	112	23
Copper	21	21
Lead	54	54
Mercury	9	9
Nickel	21	21
Silver	22	17
Uranium-233/234	134	133
Uranium-235	144	87
Uranium-238	134	133
Zinc	21	21

COPC = contaminant of potential concern
ROD = record of decision

Table 5-27. Summary of Soil Data Used for 100-B/C Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Aluminum	12	12	0	1.00	2,370	11,100	--	--
Antimony	12	6	6	0.50	0.23	7.9	0.284	3.5
Arsenic	9	9	0	1.00	0.69	6.5	--	--
Barium	12	12	0	1.00	24.9	93.8	--	--
Beryllium	12	12	0	1.00	0.21	0.53	--	--
Boron	3	3	0	1.00	0.92	1.4	--	--
Cadmium	12	3	9	0.25	0.2	0.43	0.039	0.38
Calcium	12	12	0	1.00	1,500	16,400	--	--
Calculated total uranium	96	96	0	1.00	0.80	37.7	--	--
Chromium	105	105	0	1.00	3.2	449	--	--
Cobalt	12	12	0	1.00	4.2	10.9	--	--
Copper	12	12	0	1.00	5.8	28.4	--	--
Hexavalent chromium	106	63	43	0.59	0.042	3.5	0.03	0.46
Iron	12	12	0	1.00	11,300	25,500	--	--
Lead	105	86	19	0.82	0.61	176	2.5	4.1
Magnesium	12	12	0	1.00	1,060	5,320	--	--
Manganese	12	12	0	1.00	98	412	--	--
Mercury	102	66	36	0.65	0.018	14.5	0.01	0.02
Molybdenum	3	3	0	1.00	0.52	0.64	--	--
Nickel	12	12	0	1.00	1.5	17.9	--	--
Potassium	12	12	0	1.00	248	1,500	--	--
Selenium	9	0	9	0.00	--	--	0.11	0.284
Silicon	3	3	0	1.00	278	1,490	--	--
Silver	12	5	7	0.42	0.06	0.72	0.52	0.64
Sodium	12	12	0	1.00	142	372	--	--
Thallium	6	0	6	0.00	--	--	0.05	0.11
Vanadium	12	12	0	1.00	18.1	68.8	--	--
Zinc	12	12	0	1.00	20.1	54.9	--	--

Table 5-27. Summary of Soil Data Used for 100-B/C Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Organics (mg/kg)								
1,1,1-Trichloroethane	3	0	3	0.00	--	--	0.005	0.006
1,1,2,2-Tetrachloroethane	3	0	3	0.00	--	--	0.005	0.006
1,1,2-Trichloroethane	3	0	3	0.00	--	--	0.005	0.006
1,1-Dichloroethane	3	0	3	0.00	--	--	0.005	0.006
1,1-Dichloroethene	3	0	3	0.00	--	--	0.005	0.006
1,2,4-Trichlorobenzene	6	0	6	0.00	--	--	0.35	9.4
1,2-Dichlorobenzene	6	0	6	0.00	--	--	0.35	9.4
1,2-Dichloroethane	3	0	3	0.00	--	--	0.005	0.006
1,2-Dichloroethene (total)	3	0	3	0.00	--	--	0.005	0.006
1,2-Dichloropropane	3	0	3	0.00	--	--	0.005	0.006
1,3-Dichlorobenzene	6	0	6	0.00	--	--	0.35	9.4
1,4-Dichlorobenzene	6	0	6	0.00	--	--	0.35	9.4
2,4,5-Trichlorophenol	6	0	6	0.00	--	--	0.7	24
2,4,6-Trichlorophenol	6	0	6	0.00	--	--	0.35	9.4
2,4-Dichlorophenol	6	0	6	0.00	--	--	0.35	9.4
2,4-Dimethylphenol	6	0	6	0.00	--	--	0.35	9.4
2,4-Dinitrophenol	6	0	6	0.00	--	--	0.88	24
2,4-Dinitrotoluene	6	0	6	0.00	--	--	0.35	9.4
2,6-Dinitrotoluene	6	0	6	0.00	--	--	0.35	9.4
2-Butanone	3	0	3	0.00	--	--	0.11	0.12
2-Chloronaphthalene	6	0	6	0.00	--	--	0.35	9.4
2-Chlorophenol	6	0	6	0.00	--	--	0.35	9.4
2-Hexanone	3	0	3	0.00	--	--	0.054	0.061
2-Methylnaphthalene	6	1	5	0.17	1.1	1.1	0.35	0.81
2-Methylphenol [cresol, o-]	6	0	6	0.00	--	--	0.35	9.4
2-Nitroaniline	6	0	6	0.00	--	--	0.88	24
2-Nitrophenol	6	0	6	0.00	--	--	0.35	9.4
3,3'-Dichlorobenzidine	6	0	6	0.00	--	--	0.35	9.4
3+4 Methylphenol [cresol, m+p]	3	0	3	0.00	--	--	0.35	9.4
3-Nitroaniline	6	0	6	0.00	--	--	0.88	24

Table 5-27. Summary of Soil Data Used for 100-B/C Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
4,6-Dinitro-2-methylphenol	6	0	6	0.00	--	--	0.88	24
4-Bromophenylphenyl ether	6	0	6	0.00	--	--	0.35	9.4
4-Chloro-3-methylphenol	6	0	6	0.00	--	--	0.35	9.4
4-Chloroaniline	6	0	6	0.00	--	--	0.35	9.4
4-Chlorophenylphenyl ether	6	0	6	0.00	--	--	0.35	9.4
4-Methylphenol [cresol, p-]	3	0	3	0.00	--	--	0.7	0.81
4-Nitroaniline	6	0	6	0.00	--	--	0.88	24
4-Nitrophenol	6	0	6	0.00	--	--	0.88	24
Acenaphthene	6	2	4	0.33	0.025	6.8	0.35	0.81
Acenaphthylene	6	0	6	0.00	--	--	0.35	9.4
Acetone	3	2	1	0.67	0.009	0.012	0.12	0.12
Aldrin	3	0	3	0.00	--	--	0.0014	0.0016
Alpha-BHC	3	0	3	0.00	--	--	0.0011	0.0012
Anthracene	6	2	4	0.33	0.042	13	0.35	0.81
Aroclor-1016	6	0	6	0.00	--	--	0.014	0.027
Aroclor-1221	6	0	6	0.00	--	--	0.014	0.041
Aroclor-1232	6	0	6	0.00	--	--	0.014	0.041
Aroclor-1242	6	0	6	0.00	--	--	0.014	0.027
Aroclor-1248	6	0	6	0.00	--	--	0.014	0.041
Aroclor-1254	6	1	5	0.17	0.13	0.13	0.014	0.036
Aroclor-1260	6	0	6	0.00	--	--	0.014	0.041
Benzene	3	0	3	0.00	--	--	0.005	0.006
Benzo[a]anthracene	6	2	4	0.33	0.12	20	0.35	0.81
Benzo[a]pyrene	6	2	4	0.33	0.088	13	0.35	0.81
Benzo[b]fluoranthene	6	2	4	0.33	0.091	11	0.35	0.81
Benzo[ghi]perylene	6	2	4	0.33	0.046	5.4	0.35	0.81
Benzo[k]fluoranthene	6	2	4	0.33	0.084	12	0.35	0.81
beta-1,2,3,4,5,6-Hexachlorocyclohexane	3	0	3	0.00	--	--	0.0021	0.0024
Bis[2-chloro-1-methylethyl]ether	6	0	6	0.00	--	--	0.35	9.4
Bis[2-Chloroethoxy]methane	6	0	6	0.00	--	--	0.35	9.4
Bis[2-chloroethyl] ether	6	0	6	0.00	--	--	0.35	9.4

Table 5-27. Summary of Soil Data Used for 100-B/C Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Bis[2-ethylhexyl] phthalate	6	3	3	0.50	0.037	0.29	0.35	9.4
Bromodichloromethane	3	0	3	0.00	--	--	0.005	0.006
Bromoform	3	0	3	0.00	--	--	0.005	0.006
Bromomethane	3	0	3	0.00	--	--	0.011	0.012
Butylbenzylphthalate	6	0	6	0.00	--	--	0.35	9.4
Carbazole	6	2	4	0.33	0.045	7.3	0.35	0.81
Carbon disulfide	3	0	3	0.00	--	--	0.005	0.006
Carbon tetrachloride	3	0	3	0.00	--	--	0.005	0.006
Chlordane	3	0	3	0.00	--	--	0.005	0.0057
Chlorobenzene	3	0	3	0.00	--	--	0.005	0.006
Chloroethane	3	0	3	0.00	--	--	0.011	0.012
Chloroform	3	0	3	0.00	--	--	0.005	0.006
Chloromethane	3	0	3	0.00	--	--	0.011	0.012
Chrysene	6	2	4	0.33	0.15	20	0.35	0.81
cis-1,3-Dichloropropene	3	0	3	0.00	--	--	0.005	0.006
Delta-BHC	3	0	3	0.00	--	--	0.0032	0.0037
Dibenz[a,h]anthracene	6	1	5	0.17	2.2	2.2	0.35	0.81
Dibenzofuran	6	1	5	0.17	3	3	0.35	0.81
Dibromochloromethane	3	0	3	0.00	--	--	0.005	0.006
Dichlorodiphenyldichloroethane	3	0	3	0.00	--	--	0.0039	0.0045
Dichlorodiphenyldichloroethylene	3	0	3	0.00	--	--	0.0014	0.0024
Dichlorodiphenyltrichloroethane	3	0	3	0.00	--	--	0.0042	0.014
Dieldrin	3	0	3	0.00	--	--	0.00071	0.0038
Diethylphthalate	6	0	6	0.00	--	--	0.35	9.4
Dimethyl phthalate	6	0	6	0.00	--	--	0.35	9.4
Di-n-butylphthalate	6	0	6	0.00	--	--	0.35	9.4
Di-n-octylphthalate	6	0	6	0.00	--	--	0.35	9.4
Endosulfan I	3	0	3	0.00	--	--	0.005	0.0057
Endosulfan II	3	0	3	0.00	--	--	0.0014	0.0016
Endosulfan sulfate	3	0	3	0.00	--	--	0.023	0.027
Endrin	3	0	3	0.00	--	--	0.0021	0.0055

Table 5-27. Summary of Soil Data Used for 100-B/C Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Endrin aldehyde	3	0	3	0.00	--	--	0.0081	0.0094
Ethylbenzene	3	0	3	0.00	--	--	0.005	0.006
Fluoranthene	6	2	4	0.33	0.36	52	0.35	0.81
Fluorene	6	1	5	0.17	5.8	5.8	0.35	0.81
Gamma-BHC [lindane]	3	0	3	0.00	--	--	0.0014	0.0016
Heptachlor	3	0	3	0.00	--	--	0.0011	0.0012
Heptachlor epoxide	3	0	3	0.00	--	--	0.029	0.034
Hexachlorobenzene	6	0	6	0.00	--	--	0.35	9.4
Hexachlorobutadiene	6	0	6	0.00	--	--	0.35	9.4
Hexachlorocyclopentadiene	6	0	6	0.00	--	--	0.35	9.4
Hexachloroethane	6	0	6	0.00	--	--	0.35	9.4
Indeno[1,2,3-cd]pyrene	6	2	4	0.33	0.043	5.6	0.35	0.81
Isophorone	6	1	5	0.17	0.28	0.28	0.35	9.4
Methoxychlor	3	0	3	0.00	--	--	0.062	0.072
Methyl isobutyl ketone	3	0	3	0.00	--	--	0.054	0.061
Methylenechloride	3	1	2	0.33	0.008	0.008	0.005	0.006
Naphthalene	6	1	5	0.17	2.1	2.1	0.35	0.81
Nitrobenzene	6	0	6	0.00	--	--	0.35	9.4
N-Nitroso-di-n-dipropylamine	6	0	6	0.00	--	--	0.35	9.4
N-Nitrosodiphenylamine	6	0	6	0.00	--	--	0.35	9.4
Pentachlorophenol	6	0	6	0.00	--	--	0.88	24
Phenanthrene	6	2	4	0.33	0.26	46	0.35	0.81
Phenol	6	0	6	0.00	--	--	0.35	9.4
Pyrene	6	2	4	0.33	0.23	35	0.35	0.81
Styrene	3	0	3	0.00	--	--	0.005	0.006
Tetrachloroethene	3	0	3	0.00	--	--	0.005	0.006
Toluene	3	0	3	0.00	--	--	0.005	0.006
Toxaphene	3	0	3	0.00	--	--	0.085	0.098
trans-1,3-Dichloropropene	3	0	3	0.00	--	--	0.005	0.006
Trichloroethene	3	0	3	0.00	--	--	0.005	0.006
Vinyl chloride	3	0	3	0.00	--	--	0.011	0.012

Table 5-27. Summary of Soil Data Used for 100-B/C Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Xylenes (total)	3	0	3	0.00	--	--	0.005	0.006
Radionuclides (pCi/g)								
Americium-241	101	52	49	0.51	0.0226	14.2	-0.073	0.39
Cesium-137	107	94	13	0.88	0.019	2030	-0.116	0.089
Cobalt-58	8	5	3	0.63	0.52	1.74	-0.00692	0.0129
Cobalt-60	107	65	42	0.61	0.016	94.4	-0.019	0.12
Europium-152	107	84	23	0.79	0.043	844	-0.0213	0.27
Europium-154	107	49	58	0.46	0.044	104	0.00149	35
Europium-155	107	14	93	0.13	0.17	3.49	0.00875	2.23
Gross alpha	9	7	2	0.78	4.31	32.5	3.8	5.88
Gross beta	11	11	0	1.00	14.1	373	--	--
Iron-59	8	0	8	0.00	--	--	-0.0434	0.306
Nickel-63	66	38	28	0.58	3.32	6140	-1.52	3.31
Niobium-94	1	1	0	1.00	0.336	0.336	--	--
Plutonium-238	96	23	73	0.24	0.0342	1.35	-0.047	0.552
Plutonium-239/240	96	63	33	0.66	0.033	51.3	-0.003	0.167
Potassium-40	89	89	0	1.00	4.37	18.2	--	--
Radium-224	25	25	0	1.00	0.429	0.85	--	--
Radium-226	74	72	2	0.97	0.271	0.69	0.36	0.45
Radium-228	75	69	6	0.92	0.379	1.06	0.35	1
Strontium-90	96	80	16	0.83	0.12	23.8	-0.072	0.19
Thorium-228	54	54	0	1.00	0.289	0.819	--	--
Thorium-232	54	48	6	0.89	0.379	1.06	0.35	1
Tritium	3	0	3	0.00	--	--	-0.03	-0.005
Uranium-233/234	96	96	0	1.00	0.228	10.4	--	--
Uranium-235	99	37	62	0.37	0.0216	0.13	0	1.06
Uranium-238	96	96	0	1.00	0.264	12.5	--	--

Table 5-27. Summary of Soil Data Used for 100-B/C Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Anions (mg/kg)								
Cyanide	3	0	3	0.00	--	--	0.53	0.6
Sulfate	1	1	0	1.00	5.91	5.91	--	--
Other								
pH measurement	1	1	0	1.00	9.1	9.1	--	--

-- = not applicable
BHC = benzene hexachloride

Table 5-28. Summary of Soil Data Used for 100-K Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement.

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Calculated total uranium	24	24	0	1.00	0.667	2.99	--	--
Chromium	9	9	0	1.00	9.6	18	--	--
Hexavalent chromium	33	24	9	0.73	0.56	8.66	0.2	0.21
Radionuclides (pCi/g)								
Americium-241	54	20	34	0.37	0.386	7.66	-0.057	0.85
Carbon-14	24	2	22	0.08	2	4.62	-2.19	3.66
Cesium-137	54	46	8	0.85	0.065	261	0.022	0.045
Cobalt-60	54	36	18	0.67	0.044	9.62	0.028	0.077
Europium-152	54	45	9	0.83	0.124	194	0.06	0.19
Europium-154	54	30	24	0.56	0.288	18	0.073	0.29
Europium-155	54	0	54	0.00	--	--	0.066	2
Nickel-63	24	24	0	1.00	6.88	1,570	--	--
Plutonium-238	24	4	20	0.17	0.469	0.824	0	0.301
Plutonium-239/240	24	21	3	0.88	0.462	13.4	0	0.171
Potassium-40	54	53	1	0.98	5.92	35.6	0.65	0.65
Radium-226	54	45	9	0.83	0.273	1.07	0.052	0.75
Radium-228	54	39	15	0.72	0.377	1.58	0.1	1.2
Strontium-90	33	33	0	1.00	0.824	20.1	--	--
Thorium-228	54	46	8	0.85	0.347	1.17	0.033	0.77
Thorium-232	54	39	15	0.72	0.377	1.58	0.1	1.2
Uranium-233/234	24	24	0	1.00	0.299	1.11	--	--
Uranium-235	54	3	51	0.06	0.038	0.045	0	0.43
Uranium-238	24	24	0	1.00	0.219	1	--	--

-- = not applicable

Table 5-29. Summary of Soil Data Used for 100-N Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement.

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Mercury	10	0	10	0.00	--	--	0.01	0.02
Organics (mg/kg)								
Methanol	5	0	5	0.00	--	--	19	27
Radionuclides (pCi/g)								
Americium-241	50	24	26	0.48	0.207	1,360	-0.024	11
Cesium-137	40	32	8	0.80	0.13	43,100	0.018	0.069
Cobalt-60	40	37	3	0.93	0.062	62,400	0.025	0.036
Europium-152	40	0	40	0.00	--	--	0.049	120
Europium-154	40	3	37	0.08	0.211	234	0.047	170
Europium-155	40	0	40	0.00	--	--	0.034	130
Nickel-63	28	18	10	0.64	2.47	6,040	-26.9	8.49
Plutonium-238	28	15	13	0.54	0.222	276	-0.056	1.47
Plutonium-239/240	28	24	4	0.86	0.23	1,730	0.047	0.199
Potassium-40	40	35	5	0.88	7.02	216	11	48
Radium-226	40	21	19	0.53	0.213	0.394	0.26	79
Radium-228	40	17	23	0.43	0.356	0.714	0.38	310
Strontium-90	28	27	1	0.96	5.32	3710	-0.138	-0.138
Thorium-228	40	23	17	0.58	0.325	0.581	0.292	49
Thorium-232	40	17	23	0.43	0.356	0.714	0.38	310
Tritium	28	0	28	0.00	--	--	-0.497	0.129
Uranium-235	40	1	39	0.03	44.8	44.8	0.058	97
Anions (mg/kg)								
Nitrogen in nitrite and nitrate	20	11	9	0.55	0.2	14.8	0.037	0.2

-- = not applicable

Table 5-30. Summary of Soil Data Used for 100-D/100-H Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (4 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Arsenic	38	38	0	1.00	1.2	11.3	--	--
Barium	3	3	0	1.00	53.4	58.1	--	--
Cadmium	3	2	1	0.67	0.17	0.21	0.04	0.04
Calculated total uranium	75	74	1	0.99	0.64	2.14	0.55	0.55
Chromium	65	65	0	1.00	6.8	226	--	--
Hexavalent chromium	110	41	69	0.37	0.41	10.4	0.4	0.8
Lead	70	61	9	0.87	1.9	31.9	2.4	3.1
Lithium	3	3	0	1.00	8.2	10	--	--
Mercury	52	22	30	0.42	0.04	1.8	0.01	0.02
Selenium	3	0	3	0.00	--	--	0.27	0.33
Silver	3	0	3	0.00	--	--	0.07	0.08
Sodium	3	3	0	1.00	298	397	--	--
Organics (mg/kg)								
1,2,4-Trichlorobenzene	3	0	3	0.00	--	--	0.35	0.35
1,2-Dichlorobenzene	3	0	3	0.00	--	--	0.35	0.35
1,3-Dichlorobenzene	3	0	3	0.00	--	--	0.35	0.35
1,4-Dichlorobenzene	3	0	3	0.00	--	--	0.35	0.35
2,4,5-Trichlorophenol	3	0	3	0.00	--	--	0.86	0.87
2,4,6-Trichlorophenol	3	0	3	0.00	--	--	0.35	0.35
2,4-Dichlorophenol	3	0	3	0.00	--	--	0.35	0.35
2,4-Dimethylphenol	3	0	3	0.00	--	--	0.35	0.35
2,4-Dinitrophenol	3	0	3	0.00	--	--	0.86	0.87
2,4-Dinitrotoluene	3	0	3	0.00	--	--	0.35	0.35
2,6-Dinitrotoluene	3	0	3	0.00	--	--	0.35	0.35
2-Chloronaphthalene	3	0	3	0.00	--	--	0.35	0.35
2-Chlorophenol	3	0	3	0.00	--	--	0.35	0.35
2-Methylnaphthalene	3	0	3	0.00	--	--	0.35	0.35
2-Methylphenol [cresol, o-]	3	0	3	0.00	--	--	0.35	0.35
2-Nitroaniline	3	0	3	0.00	--	--	0.86	0.87
2-Nitrophenol	3	0	3	0.00	--	--	0.35	0.35

Table 5-30. Summary of Soil Data Used for 100-D/100-H Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (4 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
3,3'-Dichlorobenzidine	3	0	3	0.00	--	--	0.35	0.35
3+4 Methylphenol [cresol, m+p]	3	0	3	0.00	--	--	0.35	0.35
3-Nitroaniline	3	0	3	0.00	--	--	0.86	0.87
4,6-Dinitro-2-methylphenol	3	0	3	0.00	--	--	0.86	0.87
4-Bromophenylphenyl ether	3	0	3	0.00	--	--	0.35	0.35
4-Chloro-3-methylphenol	3	0	3	0.00	--	--	0.35	0.35
4-Chloroaniline	3	0	3	0.00	--	--	0.35	0.35
4-Chlorophenylphenyl ether	3	0	3	0.00	--	--	0.35	0.35
4-Nitroaniline	3	0	3	0.00	--	--	0.86	0.87
4-Nitrophenol	3	0	3	0.00	--	--	0.86	0.87
Acenaphthene	3	0	3	0.00	--	--	0.35	0.35
Acenaphthylene	3	0	3	0.00	--	--	0.35	0.35
Anthracene	3	0	3	0.00	--	--	0.35	0.35
Aroclor-1016	59	0	59	0.00	--	--	0.0001	0.35
Aroclor-1221	59	0	59	0.00	--	--	0.0002	0.7
Aroclor-1232	59	0	59	0.00	--	--	0.0001	0.35
Aroclor-1242	59	9	50	0.15	0.043	0.23	0.0001	0.35
Aroclor-1248	59	0	59	0.00	--	--	0.0001	0.35
Aroclor-1254	63	0	63	0.00	--	--	0.0001	0.35
Aroclor-1260	59	34	25	0.58	0.031	2.07	0.0001	0.036
Benzo[a]anthracene	3	0	3	0.00	--	--	0.35	0.35
Benzo[a]pyrene	3	0	3	0.00	--	--	0.35	0.35
Benzo[b]fluoranthene	3	0	3	0.00	--	--	0.35	0.35
Benzo[ghi]perylene	3	0	3	0.00	--	--	0.35	0.35
Benzo[k]fluoranthene	3	0	3	0.00	--	--	0.35	0.35
Bis[2-chloro-1-methylethyl]ether	3	0	3	0.00	--	--	0.35	0.35
Bis[2-Chloroethoxy]methane	3	0	3	0.00	--	--	0.35	0.35
Bis[2-chloroethyl] ether	3	0	3	0.00	--	--	0.35	0.35
Bis[2-ethylhexyl] phthalate	3	3	0	1.00	0.049	0.15	--	--
Butylbenzylphthalate	3	0	3	0.00	--	--	0.35	0.35
Carbazole	3	0	3	0.00	--	--	0.35	0.35

Table 5-30. Summary of Soil Data Used for 100-D/100-H Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (4 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Chrysene	3	0	3	0.00	--	--	0.35	0.35
Dibenz[a,h]anthracene	3	0	3	0.00	--	--	0.35	0.35
Dibenzofuran	3	0	3	0.00	--	--	0.35	0.35
Diethylphthalate	3	0	3	0.00	--	--	0.35	0.35
Dimethyl phthalate	3	0	3	0.00	--	--	0.35	0.35
Di-n-butylphthalate	3	0	3	0.00	--	--	0.35	0.35
Di-n-octylphthalate	3	0	3	0.00	--	--	0.35	0.35
Fluoranthene	3	2	1	0.67	0.026	0.027	0.35	0.35
Fluorene	3	0	3	0.00	--	--	0.35	0.35
Hexachlorobenzene	3	0	3	0.00	--	--	0.35	0.35
Hexachlorobutadiene	3	0	3	0.00	--	--	0.35	0.35
Hexachlorocyclopentadiene	3	0	3	0.00	--	--	0.35	0.35
Hexachloroethane	3	0	3	0.00	--	--	0.35	0.35
Indeno[1,2,3-cd]pyrene	3	0	3	0.00	--	--	0.35	0.35
Isophorone	3	0	3	0.00	--	--	0.35	0.35
Naphthalene	3	0	3	0.00	--	--	0.35	0.35
Nitrobenzene	3	0	3	0.00	--	--	0.35	0.35
N-Nitroso-di-n-dipropylamine	3	0	3	0.00	--	--	0.35	0.35
N-Nitrosodiphenylamine	3	0	3	0.00	--	--	0.35	0.35
Pentachlorophenol	3	0	3	0.00	--	--	0.86	0.87
Phenanthrene	3	0	3	0.00	--	--	0.35	0.35
Phenol	3	0	3	0.00	--	--	0.35	0.35
Pyrene	3	2	1	0.67	0.024	0.026	0.35	0.35
Radionuclides (pCi/g)								
Americium-241	103	8	95	0.08	0.05	0.745	-0.07	1.8
Barium-133	16	0	16	0.00	--	--	0.014	0.13
Carbon-14	19	6	13	0.32	5.1	15.8	0.406	4.5
Cesium-137	103	86	17	0.83	0.018	317	0.01	0.047
Cobalt-60	103	63	40	0.61	0.033	19	0.011	0.076
Europium-152	103	78	25	0.76	0.049	230	0.027	0.16
Europium-154	103	56	47	0.54	0.071	31	0.035	1.3

Table 5-30. Summary of Soil Data Used for 100-D/100-H Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (4 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Europium-155	103	4	99	0.04	0.53	2.6	0.034	0.84
Nickel-63	68	41	27	0.60	2.62	546	-1.61	2.69
Plutonium-238	103	9	94	0.09	0.028	0.203	-0.027	0.106
Plutonium-239/240	103	54	49	0.52	0.041	9.12	-0.039	0.06
Potassium-40	103	100	3	0.97	7.49	20.6	0.71	1.6
Radium-226	103	100	3	0.97	0.189	0.736	0.046	0.335
Radium-228	102	92	10	0.90	0.37	1.08	0.096	1
Strontium-90	93	64	29	0.69	0.172	28.8	-0.109	0.134
Technetium-99	37	2	35	0.05	1.01	1.12	-0.248	0.71
Thorium-228	101	98	3	0.97	0.293	2.86	0.05	0.34
Thorium-232	102	92	10	0.90	0.37	1.08	0.096	1
Uranium-233/234	75	74	1	0.99	0.205	0.619	0.254	0.254
Uranium-235	99	3	96	0.03	0.061	0.079	-0.023	0.65
Uranium-238	75	74	1	0.99	0.209	0.708	0.17	0.17

-- = not applicable

Table 5-31. Summary of Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Aluminum	9	9	0	1.00	4,050	8,500	--	--
Antimony	9	2	7	0.22	0.28	0.662	0.279	2.6
Arsenic	9	5	4	0.56	2	3.6	1.9	2.4
Barium	38	38	0	1.00	27.8	82.7	--	--
Beryllium	9	5	4	0.56	0.2	0.52	0.15	0.22
Boron	5	5	0	1.00	0.954	2.8	--	--
Cadmium	9	4	5	0.44	0.055	0.292	0.028	0.35
Calcium	9	9	0	1.00	2,140	6,670	--	--
Calculated total uranium	33	31	2	0.94	0.69	1.92	0.47	1.40
Chromium	39	39	0	1.00	7.3	195	--	--
Cobalt	24	24	0	1.00	4	7.3	--	--
Copper	9	5	4	0.56	11.3	14.2	11.1	14.1
Hexavalent chromium	100	42	58	0.42	0.42	11.2	0.209	0.46
Iron	9	9	0	1.00	8,550	20,800	--	--
Lead	39	20	19	0.51	2.3	181	2.95	3.55
Magnesium	9	9	0	1.00	3,130	4,440	--	--
Manganese	9	9	0	1.00	188	352	--	--
Mercury	38	10	28	0.26	0.048	1.38	0.013	0.05
Molybdenum	5	4	1	0.80	0.211	0.621	0.229	0.229
Nickel	9	9	0	1.00	7.6	18.3	--	--
Potassium	9	9	0	1.00	517	1,900	--	--
Selenium	9	0	9	0.00	--	--	0.345	0.57
Silicon	5	5	0	1.00	177	601	--	--
Silver	9	2	7	0.22	0.62	0.65	0.09	0.53
Sodium	9	6	3	0.67	133	261	173	244
Thallium	4	0	4	0.00	--	--	0.32	0.32
Vanadium	9	9	0	1.00	19.4	44.8	--	--
Zinc	9	9	0	1.00	21.8	64.2	--	--

Table 5-31. Summary of Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Organics (mg/kg)								
1,1,1-Trichloroethane	1	0	1	0.00	--	--	0.01	0.01
1,1,2,2-Tetrachloroethane	1	0	1	0.00	--	--	0.01	0.01
1,1,2-Trichloroethane	1	0	1	0.00	--	--	0.01	0.01
1,1-Dichloroethane	1	0	1	0.00	--	--	0.01	0.01
1,1-Dichloroethene	1	0	1	0.00	--	--	0.01	0.01
1,2,4-Trichlorobenzene	2	0	2	0.00	--	--	0.33	0.36
1,2-Dichlorobenzene	2	0	2	0.00	--	--	0.33	0.36
1,2-Dichloroethane	1	0	1	0.00	--	--	0.01	0.01
1,2-Dichloroethene (total)	1	0	1	0.00	--	--	0.01	0.01
1,2-Dichloropropane	1	0	1	0.00	--	--	0.01	0.01
1,3-Dichlorobenzene	2	0	2	0.00	--	--	0.33	0.36
1,4-Dichlorobenzene	2	0	2	0.00	--	--	0.33	0.36
2,4,5-Trichlorophenol	2	0	2	0.00	--	--	0.81	0.91
2,4,6-Trichlorophenol	2	0	2	0.00	--	--	0.33	0.36
2,4-Dichlorophenol	2	0	2	0.00	--	--	0.33	0.36
2,4-Dimethylphenol	2	0	2	0.00	--	--	0.33	0.36
2,4-Dinitrophenol	2	0	2	0.00	--	--	0.81	0.91
2,4-Dinitrotoluene	2	0	2	0.00	--	--	0.33	0.36
2,6-Dinitrotoluene	2	0	2	0.00	--	--	0.33	0.36
2-Butanone	1	0	1	0.00	--	--	0.01	0.01
2-Chloronaphthalene	2	0	2	0.00	--	--	0.33	0.36
2-Chlorophenol	2	0	2	0.00	--	--	0.33	0.36
2-Hexanone	1	0	1	0.00	--	--	0.01	0.01
2-Methylnaphthalene	2	0	2	0.00	--	--	0.33	0.36
2-Methylphenol [cresol, o-]	2	0	2	0.00	--	--	0.33	0.36
2-Nitroaniline	2	0	2	0.00	--	--	0.81	0.91
2-Nitrophenol	2	0	2	0.00	--	--	0.33	0.36
3,3'-Dichlorobenzidine	2	0	2	0.00	--	--	0.33	0.36
3+4 Methylphenol [cresol, m+p]	1	0	1	0.00	--	--	0.36	0.36
3-Nitroaniline	2	0	2	0.00	--	--	0.81	0.91

Table 5-31. Summary of Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
4,6-Dinitro-2-methylphenol	2	0	2	0.00	--	--	0.81	0.91
4-Bromophenylphenyl ether	2	0	2	0.00	--	--	0.33	0.36
4-Chloro-3-methylphenol	2	0	2	0.00	--	--	0.33	0.36
4-Chloroaniline	2	0	2	0.00	--	--	0.33	0.36
4-Chlorophenylphenyl ether	2	0	2	0.00	--	--	0.33	0.36
4-Methylphenol [cresol, p-]	1	0	1	0.00	--	--	0.33	0.33
4-Nitroaniline	2	0	2	0.00	--	--	0.81	0.91
4-Nitrophenol	2	0	2	0.00	--	--	0.81	0.91
Acenaphthene	2	0	2	0.00	--	--	0.33	0.36
Acenaphthylene	2	0	2	0.00	--	--	0.33	0.36
Acetone	1	0	1	0.00	--	--	0.01	0.01
Anthracene	2	0	2	0.00	--	--	0.33	0.36
Aroclor-1016	48	0	48	0.00	--	--	0.014	34
Aroclor-1221	48	0	48	0.00	--	--	0.014	68
Aroclor-1232	48	0	48	0.00	--	--	0.014	34
Aroclor-1242	48	0	48	0.00	--	--	0.014	34
Aroclor-1248	48	3	45	0.06	0.028	0.049	0.014	34
Aroclor-1254	48	6	42	0.13	0.014	0.1	0.014	34
Aroclor-1260	48	2	46	0.04	0.017	62	0.014	0.037
Benzene	1	0	1	0.00	--	--	0.01	0.01
Benzo[a]anthracene	2	0	2	0.00	--	--	0.33	0.36
Benzo[a]pyrene	2	0	2	0.00	--	--	0.33	0.36
Benzo[b]fluoranthene	2	0	2	0.00	--	--	0.33	0.36
Benzo[ghi]perylene	2	0	2	0.00	--	--	0.33	0.36
Benzo[k]fluoranthene	2	0	2	0.00	--	--	0.33	0.36
Bis[2-chloro-1-methylethyl]ether	2	0	2	0.00	--	--	0.33	0.36
Bis[2-Chloroethoxy]methane	2	0	2	0.00	--	--	0.33	0.36
Bis[2-chloroethyl] ether	2	0	2	0.00	--	--	0.33	0.36
Bis[2-ethylhexyl] phthalate	2	0	2	0.00	--	--	0.15	0.33
Bromodichloromethane	1	0	1	0.00	--	--	0.01	0.01
Bromoform	1	0	1	0.00	--	--	0.01	0.01

Table 5-31. Summary of Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Bromomethane	1	0	1	0.00	--	--	0.01	0.01
Butylbenzylphthalate	2	0	2	0.00	--	--	0.33	0.36
Carbazole	2	0	2	0.00	--	--	0.33	0.36
Carbon disulfide	1	0	1	0.00	--	--	0.01	0.01
Carbon tetrachloride	1	0	1	0.00	--	--	0.01	0.01
Chlorobenzene	1	0	1	0.00	--	--	0.01	0.01
Chloroethane	1	0	1	0.00	--	--	0.01	0.01
Chloroform	1	0	1	0.00	--	--	0.01	0.01
Chloromethane	1	0	1	0.00	--	--	0.01	0.01
Chrysene	2	0	2	0.00	--	--	0.33	0.36
cis-1,3-Dichloropropene	1	0	1	0.00	--	--	0.01	0.01
Dibenz[a,h]anthracene	2	0	2	0.00	--	--	0.33	0.36
Dibenzofuran	2	0	2	0.00	--	--	0.33	0.36
Dibromochloromethane	1	0	1	0.00	--	--	0.01	0.01
Diethylphthalate	2	0	2	0.00	--	--	0.33	0.36
Dimethyl phthalate	2	0	2	0.00	--	--	0.33	0.36
Di-n-butylphthalate	2	1	1	0.50	0.019	0.019	0.33	0.33
Di-n-octylphthalate	2	0	2	0.00	--	--	0.33	0.36
Ethylbenzene	1	0	1	0.00	--	--	0.01	0.01
Fluoranthene	2	0	2	0.00	--	--	0.33	0.36
Fluorene	2	0	2	0.00	--	--	0.33	0.36
Hexachlorobenzene	2	0	2	0.00	--	--	0.33	0.36
Hexachlorobutadiene	2	0	2	0.00	--	--	0.33	0.36
Hexachlorocyclopentadiene	2	0	2	0.00	--	--	0.33	0.36
Hexachloroethane	2	0	2	0.00	--	--	0.33	0.36
Indeno[1,2,3-cd]pyrene	2	0	2	0.00	--	--	0.33	0.36
Isophorone	2	0	2	0.00	--	--	0.33	0.36
Methyl isobutyl ketone	1	0	1	0.00	--	--	0.01	0.01
Methylenechloride	1	0	1	0.00	--	--	0.01	0.01
Naphthalene	2	0	2	0.00	--	--	0.33	0.36
Nitrobenzene	2	0	2	0.00	--	--	0.33	0.36

Table 5-31. Summary of Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
N-Nitroso-di-n-dipropylamine	2	0	2	0.00	--	--	0.33	0.36
N-Nitrosodiphenylamine	2	0	2	0.00	--	--	0.33	0.36
Pentachlorophenol	2	0	2	0.00	--	--	0.81	0.91
Phenanthrene	2	0	2	0.00	--	--	0.33	0.36
Phenol	2	0	2	0.00	--	--	0.33	0.36
Pyrene	2	0	2	0.00	--	--	0.33	0.36
Styrene	1	0	1	0.00	--	--	0.01	0.01
Tetrachloroethene	1	0	1	0.00	--	--	0.01	0.01
Toluene	1	1	0	1.00	0.001	0.001	--	--
trans-1,3-Dichloropropene	1	0	1	0.00	--	--	0.01	0.01
Trichloroethene	1	0	1	0.00	--	--	0.01	0.01
Vinyl chloride	1	0	1	0.00	--	--	0.01	0.01
Xylenes (total)	1	0	1	0.00	--	--	0.01	0.01
Radionuclides (pCi/g)								
Americium-241	88	8	80	0.09	0.049	5.26	-0.072	1
Barium-133	29	0	29	0.00	--	--	0.022	1.1
Carbon-14	73	17	56	0.23	4.66	142	-2.63	4.95
Cerium-144	4	0	4	0.00	--	--	0.2	0.3
Cesium-134	4	0	4	0.00	--	--	0.05	0.06
Cesium-137	88	76	12	0.86	0.05	463	0.034	0.086
Cobalt-58	4	0	4	0.00	--	--	0.04	0.06
Cobalt-60	88	50	38	0.57	0.039	34.1	0.028	0.24
Europium-152	88	69	19	0.78	0.133	422	0.07	0.17
Europium-154	88	40	48	0.45	0.106	45.3	0.04	0.66
Europium-155	88	0	88	0.00	--	--	0.056	2.6
Gross alpha	5	4	1	0.80	8.42	12.5	5.39	5.39
Gross beta	5	5	0	1.00	16.2	20.1	--	--
Iron-59	4	0	4	0.00	--	--	0.1	0.1
Manganese-54	4	0	4	0.00	--	--	0.04	0.05
Nickel-59	29	0	29	0.00	--	--	-7.2	13.6
Nickel-63	54	38	16	0.70	2.24	1360	-0.712	1.95

Table 5-31. Summary of Soil Data Used for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Niobium-94	4	0	4	0.00	--	--	0.04	0.06
Plutonium-238	34	4	30	0.12	0.169	0.659	-0.057	0.22
Plutonium-239/240	34	16	18	0.47	0.052	17.1	-0.006	0.25
Plutonium-241	29	11	18	0.38	9.52	30.2	-2.54	8.22
Potassium-40	88	86	2	0.98	10.4	43.2	2.2	6.1
Radium-226	88	68	20	0.77	0.27	0.62	0.16	1.8
Radium-228	88	66	22	0.75	0.413	1.13	0.6	3.7
Ruthenium-103	4	0	4	0.00	--	--	0.03	0.06
Ruthenium-106	4	0	4	0.00	--	--	0.3	0.5
Sodium-22	4	0	4	0.00	--	--	0.05	0.06
Strontium-90	77	60	17	0.78	0.14	235	-0.067	0.7
Technetium-99	8	0	8	0.00	--	--	-0.061	0.32
Thorium-228	88	70	18	0.80	0.329	0.93	0.34	1.3
Thorium-232	88	66	22	0.75	0.413	1.13	0.6	3.7
Tin-113	4	0	4	0.00	--	--	0.04	0.07
Tritium	30	15	15	0.50	0.194	0.846	-0.104	0.857
Uranium-233/234	33	32	1	0.97	0.209	0.65	0.405	0.405
Uranium-235	88	2	86	0.02	0.042	0.066	-0.098	1.2
Uranium-238	33	31	2	0.94	0.232	0.643	0.159	0.486
Anions (mg/kg)								
Chloride	4	4	0	1.00	6.8	14.3	--	--
Fluoride	4	4	0	1.00	0.9	71	--	--
Nitrogen in nitrite and nitrate	4	0	4	0.00	--	--	2.56	2.6
Phosphate	4	2	2	0.50	2	2.6	2	2
Sulfate	4	4	0	1.00	9	120	--	--

-- = not applicable

Table 5-32. Summary of Soil Data Used for 300 Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (mg/kg)								
Arsenic	20	15	5	0.75	0.95	8.2	0.309	2.8
Barium	11	11	0	1.00	66.5	104	--	--
Cadmium	13	3	10	0.23	0.07	1.5	0.04	0.32
Calculated total uranium	27	26	1	0.96	0.78	26.61	0.53	0.53
Chromium	12	12	0	1.00	2.6	27.7	--	--
Lead	21	19	2	0.90	2.8	82.3	0.23	1.3
Thallium	6	6	0	1.00	0.9	5.2	--	--
Organics (mg/kg)								
1,1,1-Trichloroethane	6	0	6	0.00	--	--	0.006	0.008
1,1,2,2-Tetrachloroethane	6	0	6	0.00	--	--	0.006	0.008
1,1,2-Trichloroethane	6	0	6	0.00	--	--	0.006	0.008
1,1-Dichloroethane	6	0	6	0.00	--	--	0.006	0.008
1,1-Dichloroethene	9	0	9	0.00	--	--	0.005	0.008
1,2,4-Trichlorobenzene	6	0	6	0.00	--	--	0.36	0.46
1,2-Dichlorobenzene	6	0	6	0.00	--	--	0.36	0.46
1,2-Dichloroethane	6	0	6	0.00	--	--	0.006	0.008
1,2-Dichloroethene (total)	6	0	6	0.00	--	--	0.006	0.008
1,2-Dichloropropane	6	0	6	0.00	--	--	0.006	0.008
1,3-Dichlorobenzene	6	0	6	0.00	--	--	0.36	0.46
1,4-Dichlorobenzene	6	0	6	0.00	--	--	0.36	0.46
1-Butanol	3	0	3	0.00	--	--	0.24	0.28
1-Propanol	3	0	3	0.00	--	--	1	1
2,4,5-Trichlorophenol	6	0	6	0.00	--	--	0.9	1.1
2,4,6-Trichlorophenol	6	0	6	0.00	--	--	0.36	0.46
2,4-Dichlorophenol	6	0	6	0.00	--	--	0.36	0.46
2,4-Dimethylphenol	6	0	6	0.00	--	--	0.36	0.46
2,4-Dinitrophenol	6	0	6	0.00	--	--	0.9	1.1
2,4-Dinitrotoluene	6	0	6	0.00	--	--	0.36	0.46
2,6-Dinitrotoluene	6	0	6	0.00	--	--	0.36	0.46
2-Butanone	9	1	8	0.11	0.13	0.13	0.01	0.015

Table 5-32. Summary of Soil Data Used for 300 Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
2-Chloronaphthalene	6	0	6	0.00	--	--	0.36	0.46
2-Chlorophenol	6	0	6	0.00	--	--	0.36	0.46
2-Hexanone	6	0	6	0.00	--	--	0.011	0.015
2-Methylnaphthalene	6	0	6	0.00	--	--	0.36	0.46
2-Methylphenol [cresol, o-]	6	0	6	0.00	--	--	0.36	0.46
2-Nitroaniline	6	0	6	0.00	--	--	0.9	1.1
2-Nitrophenol	6	0	6	0.00	--	--	0.36	0.46
3,3'-Dichlorobenzidine	6	0	6	0.00	--	--	0.36	0.46
3+4 Methylphenol [cresol, m+p]	6	0	6	0.00	--	--	0.36	0.46
3-Nitroaniline	6	0	6	0.00	--	--	0.9	1.1
4,6-Dinitro-2-methylphenol	6	0	6	0.00	--	--	0.9	1.1
4-Bromophenylphenyl ether	6	0	6	0.00	--	--	0.36	0.46
4-Chloro-3-methylphenol	6	0	6	0.00	--	--	0.36	0.46
4-Chloroaniline	6	0	6	0.00	--	--	0.36	0.46
4-Chlorophenylphenyl ether	6	0	6	0.00	--	--	0.36	0.46
4-Nitroaniline	6	0	6	0.00	--	--	0.9	1.1
4-Nitrophenol	6	0	6	0.00	--	--	0.9	1.1
Acenaphthene	6	0	6	0.00	--	--	0.36	0.46
Acenaphthylene	6	0	6	0.00	--	--	0.36	0.46
Acetone	6	2	4	0.33	0.005	0.016	0.011	0.015
Anthracene	6	0	6	0.00	--	--	0.36	0.46
Aroclor-1016	15	0	15	0.00	--	--	0.015	4.6
Aroclor-1221	15	0	15	0.00	--	--	0.015	9.1
Aroclor-1232	15	0	15	0.00	--	--	0.015	4.6
Aroclor-1242	15	0	15	0.00	--	--	0.015	4.6
Aroclor-1248	15	1	14	0.07	0.052	0.052	0.015	4.6
Aroclor-1254	15	0	15	0.00	--	--	0.015	4.6
Aroclor-1260	15	0	15	0.00	--	--	0.015	4.6
Benzene	9	0	9	0.00	--	--	0.005	0.008
Benzo[a]anthracene	6	0	6	0.00	--	--	0.36	0.46
Benzo[a]pyrene	12	0	12	0.00	--	--	0.34	0.46

Table 5-32. Summary of Soil Data Used for 300 Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Benzo[b]fluoranthene	6	0	6	0.00	--	--	0.36	0.46
Benzo[ghi]perylene	6	0	6	0.00	--	--	0.36	0.46
Benzo[k]fluoranthene	6	0	6	0.00	--	--	0.36	0.46
Bis[2-chloro-1-methylethyl]ether	6	0	6	0.00	--	--	0.36	0.46
Bis[2-Chloroethoxy]methane	6	0	6	0.00	--	--	0.36	0.46
Bis[2-chloroethyl] ether	6	0	6	0.00	--	--	0.36	0.46
Bis[2-ethylhexyl] phthalate	8	7	1	0.88	0.025	1.953	0.46	0.46
Bromodichloromethane	6	0	6	0.00	--	--	0.006	0.008
Bromoform	6	0	6	0.00	--	--	0.006	0.008
Bromomethane	6	0	6	0.00	--	--	0.011	0.015
Butylbenzylphthalate	7	1	6	0.14	0.076	0.076	0.36	0.46
Carbazole	6	0	6	0.00	--	--	0.36	0.46
Carbon disulfide	6	0	6	0.00	--	--	0.006	0.008
Carbon tetrachloride	6	0	6	0.00	--	--	0.006	0.008
Chlorobenzene	6	0	6	0.00	--	--	0.006	0.008
Chloroethane	6	0	6	0.00	--	--	0.011	0.015
Chloroform	6	0	6	0.00	--	--	0.006	0.008
Chloromethane	6	0	6	0.00	--	--	0.011	0.015
Chrysene	12	0	12	0.00	--	--	0.34	0.46
cis-1,3-Dichloropropene	6	0	6	0.00	--	--	0.006	0.008
Cyclohexane	3	0	3	0.00	--	--	0.005	0.006
Decane	3	0	3	0.00	--	--	1	1
Dibenz[a,h]anthracene	6	0	6	0.00	--	--	0.36	0.46
Dibenzofuran	6	0	6	0.00	--	--	0.36	0.46
Dibromochloromethane	6	0	6	0.00	--	--	0.006	0.008
Diethyl ether	3	1	2	0.33	0.001	0.001	0.01	0.011
Diethylphthalate	6	0	6	0.00	--	--	0.36	0.46
Dimethyl phthalate	6	0	6	0.00	--	--	0.36	0.46
Di-n-butylphthalate	6	0	6	0.00	--	--	0.36	0.46
Di-n-octylphthalate	6	0	6	0.00	--	--	0.36	0.46
Ethanol	3	0	3	0.00	--	--	1	1

Table 5-32. Summary of Soil Data Used for 300 Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Ethylbenzene	6	0	6	0.00	--	--	0.006	0.008
Fluoranthene	6	0	6	0.00	--	--	0.36	0.46
Fluorene	6	0	6	0.00	--	--	0.36	0.46
Hexachlorobenzene	6	0	6	0.00	--	--	0.36	0.46
Hexachlorobutadiene	6	0	6	0.00	--	--	0.36	0.46
Hexachlorocyclopentadiene	6	0	6	0.00	--	--	0.36	0.46
Hexachloroethane	6	0	6	0.00	--	--	0.36	0.46
Hexadecanoic acid [9CI]	1	1	0	1.00	0.19	0.19	--	--
Hexane	3	0	3	0.00	--	--	1	1
Indeno[1,2,3-cd]pyrene	6	0	6	0.00	--	--	0.36	0.46
Isophorone	6	0	6	0.00	--	--	0.36	0.46
Methyl isobutyl ketone	6	0	6	0.00	--	--	0.011	0.015
Methylenechloride	6	6	0	1.00	0.014	0.04	--	--
Naphthalene	6	0	6	0.00	--	--	0.36	0.46
n-Butylbenzene	3	0	3	0.00	--	--	0.005	0.006
Nitrobenzene	6	0	6	0.00	--	--	0.36	0.46
N-Nitroso-di-n-dipropylamine	6	0	6	0.00	--	--	0.36	0.46
N-Nitrosodiphenylamine	6	0	6	0.00	--	--	0.36	0.46
Pentachlorophenol	6	0	6	0.00	--	--	0.9	1.1
Phenanthrene	6	0	6	0.00	--	--	0.36	0.46
Phenol	6	0	6	0.00	--	--	0.36	0.46
Pyrene	6	0	6	0.00	--	--	0.36	0.46
Styrene	6	0	6	0.00	--	--	0.006	0.008
Tetrachloroethene	9	0	9	0.00	--	--	0.005	0.008
Toluene	6	1	5	0.17	0.00481	0.00481	0.006	0.008
Total petroleum hydrocarbons - diesel range	9	5	4	0.56	0.018	34	0.0129	16.4
Total petroleum hydrocarbons - kerosene range	6	2	4	0.33	0.019	42	0.0129	16.4
Total petroleum hydrocarbons - motor oil (high boiling)	3	3	0	1.00	0.046	0.065	--	--
trans-1,3-Dichloropropene	6	0	6	0.00	--	--	0.006	0.008
Trichloroethene	9	0	9	0.00	--	--	0.005	0.008

Table 5-32. Summary of Soil Data Used for 300 Record of Decision Decision Area Deep Zone Contaminant of Potential Concern Refinement. (5 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Trichloromonofluoromethane	3	1	2	0.33	0.012	0.012	0.005	0.006
Vinyl chloride	6	0	6	0.00	--	--	0.011	0.015
Xylenes (total)	6	0	6	0.00	--	--	0.006	0.008
Radionuclides (pCi/g)								
Cesium-137	6	0	6	0.00	--	--	-0.00988	0.00179
Cobalt-60	6	0	6	0.00	--	--	-0.0174	0.0259
Europium-152	6	0	6	0.00	--	--	-0.0321	0.00552
Europium-154	6	0	6	0.00	--	--	-0.0555	0.0397
Europium-155	6	0	6	0.00	--	--	0.0102	0.0499
Potassium-40	6	6	0	1.00	7.06	15	--	--
Radium-224	6	6	0	1.00	0.38	0.658	--	--
Radium-226	6	6	0	1.00	0.286	0.54	--	--
Radium-228	6	6	0	1.00	0.38	0.799	--	--
Uranium-233/234	27	26	1	0.96	0.27	8.6	0.139	0.139
Uranium-235	27	10	17	0.37	0.028	0.512	0	0.226
Uranium-238	27	26	1	0.96	0.263	8.87	0.167	0.167

-- = not applicable

Table 5-33. Summary of Statistical Comparisons to Reference and Background for 100-B/C Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Inorganics (mg/kg)																									
Aluminum	12	12	2,370	11,100	50	50	3,960	11,900	0.988	0.957	1	--	--	153	153	3,940	28,800	0.999	0.938	1	--	--	No	No	Not different from reference or background
Antimony	12	6	0.23	7.9	50	2	[0.2]	[0.66]	--	--	0.027	<0.001	Greater	78	8	[11.8]	[29.1]	--	--	1	0.002	Greater	See Table 4-43	Yes	Greater than reference, greater than background based on 1 of 2 tests
Arsenic	9	9	0.69	6.5	50	50	1.6	4.4	0.915	0.261	0.153	--	--	150	133	3	27.7	0.995	0.884	1	--	--	No	No	Not different from reference or background
Barium	12	12	24.9	93.8	50	50	48.6	134	0.9995	1	1	--	--	153	153	45.2	294	1	1	1	--	--	No	No	Not different from reference or background
Beryllium	12	12	0.21	0.53	50	48	[0.005]	0.77	0.9947	1	1	--	--	150	137	[0.46]	2.5	1	1	1	--	--	No	No	Not different from reference or background
Boron	3	3	0.92	1.4	50	46	[0.36]	2.7	0.8375	1	1	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 3 tests
Cadmium	12	3	[0.039]	0.43	50	17	[0.03]	0.24	--	0.485	0.007	0.799	Equal	150	5	0.61	2.9	--	--	1	0.008	Greater	See Table 4-43	Yes	Greater than reference based on 1 of 3 tests; greater than background based on 1 of 2 tests
Calcium	12	12	1,500	16,400	50	50	2,820	9,000	No test	No test	No test	No test	No test	153	153	2,880	86,600	No test	No test	No test	No test	No test	No	No	Essential nutrient
Calculated total uranium	96	96	0.801	37.7	50	27	[0.0834]	1.18	<0.001	<0.001	<0.001	--	--	47	47	1.06	3.63	0.983	0.849	0.132	--	--	See Table 4-43	Yes	Greater than reference, not different from background
Chromium	105	105	3.2	449	50	50	4.5	14.4	<0.001	<0.001	<0.001	--	--	153	153	2.9	33.2	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than reference, greater than background
Cobalt	12	12	4.2	10.9	50	50	6	12.5	0.955	0.927	1	--	--	151	151	5.7	26	1	1	1	--	--	No	No	Not different from reference or background
Copper	12	12	5.8	28.4	50	50	10.3	22.1	0.532	0.422	0.194	--	--	153	153	8.1	40.3	0.364	0.444	1	--	--	No	No	Not different from reference or background
Hexavalent chromium	106	63	[0.03]	3.5	50	24	[0.181]	0.489	--	<0.001	<0.001	0.242	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 2 of 3 tests
Iron	12	12	11,300	25,500	50	50	17,200	28,900	0.992	1	1	--	--	153	153	12,300	53,600	0.992	1	1	--	--	No	No	Not different from reference or background
Lead	105	86	0.61	176	50	50	3.6	9.1	0.938	0.009	<0.001	--	--	153	153	1.1	74.1	0.912	0.117	0.06626	--	--	See Table 4-43	Yes	Not different from background, greater than reference based on 2 of 3 tests
Magnesium	12	12	1,060	5,320	50	50	3,500	6,370	No test	No test	No test	No test	No test	153	153	2,900	10,500	No test	No test	No test	No test	No test	No	No	Essential nutrient
Manganese	12	12	98	412	50	50	280	567	1	1	1	--	--	153	153	196	1,100	1	1	1	--	--	No	No	Not different from reference or background
Mercury	102	66	[0.01]	14.5	50	2	[0.0189]	[0.025]	--	<0.001	<0.001	<0.001	Greater	151	30	0.1	3.8	--	<0.001	0.064	<0.001	Greater	See Table 4-43	Yes	Greater than reference, greater than background based on 2 of 3 tests
Molybdenum	3	3	0.52	0.64	50	15	[0.1]	0.94	--	0.005	1	--	--	96	9	2	4.3	--	--	1	--	--	See Table 4-43	Yes	Greater than reference based on 1 of 3 tests; not different from background, 1 test
Nickel	12	12	1.5	17.9	50	50	7.4	16.9	0.977	0.167	0.194	--	--	153	152	6.5	31.3	0.993	0.938	1	--	--	No	No	Not different from reference or background
Potassium	12	12	248	1,500	50	50	779	2,540	No test	No test	No test	No test	No test	150	150	851	7,900	No test	No test	No test	No test	No test	No	No	Essential nutrient
Silicon	3	3	278	1,490	50	50	198	502	No test	No test	No test	No test	No test	133	133	5.2	682	No test	No test	No test	No test	No test	No	No	Soil property measurement
Silver	12	5	0.06	0.72	50	0	[0.07]	[0.218]	--	--	--	<0.001	Greater	150	49	[1.4]	14.6	--	1	1	0.75	Equal	See Table 4-43	Yes	Not different from background; not different from reference, 1 test
Sodium	12	12	142	372	50	50	84.7	247	No test	No test	No test	No test	No test	150	149	[101]	6,060	No test	No test	No test	No test	No test	No	No	Essential nutrient
Vanadium	12	12	18.1	68.8	50	50	37.7	71.6	0.995	0.422	1	--	--	153	153	24.3	105	0.989	1	1	--	--	No	No	Not different from reference or background
Zinc	12	12	20.1	54.9	50	50	36.1	58.4	0.994	0.944	1	--	--	153	153	24.2	366	0.999	1	1	--	--	No	No	Not different from reference or background

Table 5-33. Summary of Statistical Comparisons to Reference and Background for 100-B/C Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Organics (mg/kg)																									
2-Methylnaph-thalene	6	1	[0.35]	1.1	50	0	[0.33]	[0.34]	--	--	--	0.2	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Not different from reference, 1 test
Acenaphthene	6	2	0.025	6.8	50	0	[0.0327]	[0.0335]	--	--	--	0.003	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference, 1 test
Acetone	3	2	0.009	[0.12]	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	No reference data; no background data
Anthracene	6	2	0.042	13	50	22	0.00087	0.0093	--	0.335	<0.001	0.95	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 3 tests
Aroclor-1254	6	1	[0.014]	0.13	50	0	[0.013]	[0.013]	--	--	--	0.2	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Not different from reference, 1 test
Benzo[a]anthracene	6	2	0.12	20	50	7	0.00083	0.0037	--	--	<0.001	0.529	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 2 tests
Benzo[a]pyrene	6	2	0.088	13	50	11	0.00085	0.0058	--	0.335	<0.001	0.913	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 3 tests
Benzo[b] fluoranthene	6	2	0.091	11	50	13	0.0009	0.0079	--	0.289	<0.001	0.917	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 3 tests
Benzo[ghi]perylene	6	2	0.046	5.4	50	6	0.0014	0.0044	--	--	<0.001	0.427	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 2 tests
Benzo[k] fluoranthene	6	2	0.084	12	50	5	0.00083	[0.00335]	--	--	0.048	0.327	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 2 tests
Bis[2-ethylhexyl] phthalate	6	3	0.037	[9.4]	50	38	0.017	[0.33]	0.226	0.749	0.073	0.384	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 4 tests
Carbazole	6	2	0.045	7.3	50	0	[0.33]	[0.34]	--	--	--	0.003	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference, 1 test
Chrysene	6	2	0.15	20	50	17	0.00095	0.01	--	0.335	<0.001	0.672	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 3 tests
Dibenz[a,h] anthracene	6	1	[0.35]	2.2	50	0	[0.00327]	[0.00335]	--	--	--	0.2	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Not different from reference, 1 test
Dibenzofuran	6	1	[0.35]	3	50	0	[0.33]	[0.34]	--	--	--	0.2	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Not different from reference, 1 test
Fluoranthene	6	2	[0.35]	52	50	4	0.0019	0.018	--	--	<0.001	0.231	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 2 tests
Fluorene	6	1	[0.35]	5.8	50	10	0.0013	[0.0335]	--	0.749	0.02	0.727	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 3 tests
Indeno[1,2,3-cd] pyrene	6	2	0.043	5.6	50	2	0.0028	0.0039	--	--	<0.001	0.072	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 2 tests
Isophorone	6	1	0.28	[9.4]	50	0	[0.33]	[0.34]	--	--	--	0.2	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Not different from reference, 1 test
Methylenechloride	3	1	[0.005]	0.008	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	No reference data; no background data
Naphthalene	6	1	[0.35]	2.1	50	5	0.015	[0.0335]	--	--	0.167	0.842	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Phenanthrene	6	2	0.26	46	50	26	0.00083	0.0177	--	0.335	<0.001	0.666	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 3 tests
Pyrene	6	2	0.23	35	50	15	0.00083	0.0084	--	0.289	<0.001	0.763	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference based on 1 of 3 tests
Radionuclides (pCi/g)																									
Americium-241	101	52	[-0.073]	14.2	60	3	[-0.025]	[0.4]	--	<0.001	<0.001	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 3 tests
Cesium-137	107	94	[-0.116]	2030	60	22	0.052	0.492	--	<0.001	<0.001	<0.001	Greater	55	55	-0.0017	1.78	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than reference, greater than background

Table 5-33. Summary of Statistical Comparisons to Reference and Background for 100-B/C Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Cobalt-58	8	5	[-0.00692]	1.74	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Short half-life
Cobalt-60	107	65	[-0.019]	94.4	50	0	[0.054]	[0.18]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Europium-152	107	84	[-0.0213]	844	50	0	[0.11]	[0.34]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Europium-154	107	49	[0.00149]	104	50	0	[0.13]	[0.55]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Europium-155	107	14	[0.00875]	3.49	50	0	[0.097]	[0.27]	--	--	--	0.017	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	Greater than reference, 1 test
Gross alpha	9	7	[3.8]	32.5	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	No reference data; no background data
Gross beta	11	11	14.1	373	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	No reference data; no background data
Nickel-63	66	38	[-1.52]	6140	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	No reference data; no background data
Niobium-94	1	1	0.336	0.336	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-43	Yes	No reference data; no background data
Plutonium-238	96	23	[-0.047]	1.35	60	1	[-0.039]	[0.22]	--	--	<0.001	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Plutonium-239/240	96	63	[-0.003]	51.3	60	4	[-0.015]	[0.384]	--	<0.001	<0.001	<0.001	Greater	44	44	-0.005	0.0291	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than reference, greater than background
Potassium-40	89	89	4.37	18.2	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-224	25	25	0.429	0.85	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Radium-226	74	72	0.271	0.69	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-228	75	69	[0.35]	1.06	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Strontium-90	96	80	[-0.072]	23.8	60	4	[-0.086]	1.5	--	<0.001	<0.001	<0.001	Greater	28	28	0.008	0.348	<0.001	0.001	<0.001	--	--	Yes	Yes	Greater than reference, greater than background
Thorium-228	54	54	0.289	0.819	50	37	[0.191]	0.945	No test	No test	No test	No test	No test	49	49	0.529	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-232	54	48	[0.35]	1.06	50	41	[0.079]	0.891	No test	No test	No test	No test	No test	49	49	0.468	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Uranium-233/234	96	96	0.228	10.4	50	28	[0]	0.505	<0.001	<0.001	<0.001	--	--	92	92	0.286	1.51	0.725	0.093	0.131	--	--	See Table 4-43	Yes	Greater than reference, not different from background
Uranium-235	99	37	[0]	[1.06]	50	0	[-0.017]	[0.093]	--	<0.001	--	<0.001	Greater	76	46	[0.00462]	0.386	--	0.691	1	0.004	Less	See Table 4-43	Yes	Greater than reference, not different from background
Uranium-238	96	96	0.264	12.5	50	27	[0.028]	0.397	<0.001	<0.001	<0.001	--	--	92	92	0.297	1.23	0.918	0.412	0.066	--	--	See Table 4-43	Yes	Greater than reference, not different from background
Anions (mg/kg)																									
Sulfate	1	1	5.91	5.91	10	10	0.645	3.79	--	0.182	0.091	--	--	153	153	1	4340	--	1	1	--	--	No	No	Not different from reference or background
Other (pH)																									
pH measurement	1	1	9.1	9.1	10	10	7.26	9	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Physical measurement

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
No bkg data = no background site data available
No ref data = no reference site data available
No test = no statistical test performed

Table 5-34. Summary of Statistical Comparisons to Reference and Background for 100-K Record of Decision Decision Area Deep Zone Soil Data.

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Inorganics (mg/kg)																									
Calculated total uranium	24	24	0.667	3	50	27	[0.0834]	1.18	<0.001	<0.001	<0.001	--	--	47	47	1.06	3.63	0.983	0.985	1	--	--	See Table 4-44	Yes	Greater than reference, not different from background
Chromium	9	9	9.6	18	50	50	4.5	14.4	0.01	0.214	0.021	--	--	153	153	2.9	33.2	0.102	0.562	1	--	--	See Table 4-44	Yes	Not different from background, greater than reference based on 2 of 3 tests
Hexavalent chromium	33	24	[0.2]	8.66	50	24	[0.181]	0.489	--	<0.001	<0.001	0.045	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 3 tests
Radionuclides (pCi/g)																									
Americium-241	54	20	[-0.057]	7.66	60	3	[-0.025]	[0.4]	--	<0.001	<0.001	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 3 tests
Carbon-14	24	2	[-2.19]	4.62	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-44	Yes	No reference data; no background data
Cesium-137	54	46	[0.022]	261	60	22	0.052	0.492	--	<0.001	<0.001	<0.001	Greater	55	55	-0.0017	1.78	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than reference, greater than background
Cobalt-60	54	36	[0.028]	9.62	50	0	[0.054]	[0.18]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Europium-152	54	45	[0.06]	194	50	0	[0.11]	[0.34]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Europium-154	54	30	[0.073]	18	50	0	[0.13]	[0.55]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Nickel-63	24	24	6.88	1,570	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-44	Yes	No reference data; no background data
Plutonium-238	24	4	[0]	0.824	60	1	[-0.039]	[0.22]	--	--	<0.001	0.034	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Plutonium-239/240	24	21	[0]	13.4	60	4	[-0.015]	[0.384]	--	<0.001	<0.001	<0.001	Greater	44	44	-0.005	0.0291	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than reference, greater than background
Potassium-40	54	53	[0.65]	35.6	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-226	54	45	[0.052]	1.07	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-228	54	39	[0.1]	1.58	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Strontium-90	33	33	0.824	20.1	60	4	[-0.086]	1.5	--	<0.001	<0.001	--	--	28	28	0.008	0.348	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than reference, greater than background
Thorium-228	54	46	[0.033]	1.17	50	37	[0.191]	0.945	No test	No test	No test	No test	No test	49	49	0.529	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-232	54	39	[0.1]	1.58	50	41	[0.079]	0.891	No test	No test	No test	No test	No test	49	49	0.468	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Uranium-233/234	24	24	0.299	1.11	50	28	[0]	0.505	<0.001	<0.001	<0.001	--	--	92	92	0.286	1.51	0.872	0.908	1	--	--	See Table 4-44	Yes	Greater than reference, not different from background
Uranium-235	54	3	[0]	[0.43]	50	0	[-0.017]	[0.093]	--	--	--	0.269	Equal	76	46	[0.00462]	0.386	--	1	1	<0.001	Less	See Table 4-44	Yes	Not different from background; not different from reference, 1 test
Uranium-238	24	24	0.219	1	50	27	[0.028]	0.397	<0.001	<0.001	<0.001	--	--	92	92	0.297	1.23	0.883	0.908	1	--	--	See Table 4-44	Yes	Greater than reference, not different from background

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
No bkg data = no background site data available
No ref data = no reference site data available
No test = no statistical test performed

Table 5-35. Summary of Statistical Comparisons to Reference and Background for 100-N Record of Decision Decision Area Deep Zone Soil Data.

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Radionuclides (pCi/g)																									
Americium-241	50	24	[-0.024]	1,360	60	3	[-0.025]	[0.4]	--	<0.001	<0.001	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 3 tests
Cesium-137	40	32	[0.018]	43,100	60	22	0.052	0.492	--	<0.001	<0.001	<0.001	Greater	55	55	-0.0017	1.78	0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than reference, greater than background
Cobalt-60	40	37	[0.025]	62,400	50	0	[0.054]	[0.18]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Europium-154	40	3	[0.047]	234	50	0	[0.13]	[0.55]	--	--	--	0.168	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-45	Yes	Not different from reference, 1 test
Nickel-63	28	18	[-26.9]	6,040	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-45	Yes	No reference data; no background data
Plutonium-238	28	15	[-0.056]	276	60	1	[-0.039]	[0.22]	--	--	<0.001	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Plutonium-239/240	28	24	[0.047]	1,730	60	4	[-0.015]	[0.384]	--	<0.001	<0.001	<0.001	Greater	44	44	-0.005	0.0291	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than reference, greater than background
Potassium-40	40	35	7.02	216	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-226	40	21	0.213	[79]	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-228	40	17	0.356	[310]	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Strontium-90	28	27	[-0.138]	3,710	60	4	[-0.086]	1.5	--	<0.001	<0.001	<0.001	Greater	28	28	0.008	0.348	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than reference, greater than background
Thorium-228	40	23	[0.292]	[49]	50	37	[0.191]	0.945	No test	No test	No test	No test	No test	49	49	0.529	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-232	40	17	0.356	[310]	50	41	[0.079]	0.891	No test	No test	No test	No test	No test	49	49	0.468	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Uranium-235	40	1	[0.058]	[97]	50	0	[-0.017]	[0.093]	--	--	--	0.911	Equal	76	46	[0.00462]	0.386	--	1	0.208	<0.001	Less	See Table 4-45	Yes	Not different from background; not different from reference, 1 test
Anions (mg/kg)																									
Nitrogen in nitrite and nitrate	20	11	[0.037]	14.8	40	40	0.002	1.3	0.999	0.848	0.033	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-45	Yes	Greater than reference based on 1 of 3 tests

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
No bkg data = no background site data available
No ref data = no reference site data available
No test = no statistical test performed

Table 5-36. Summary of Statistical Comparisons to Reference and Background for 100-D/100-H Record of Decision Decision Area Deep Zone Soil Data. (2 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Inorganics (mg/kg)																									
Arsenic	38	38	1.2	11.3	50	50	1.6	4.4	0.133	0.124	0.005	--	--	150	133	3	27.7	1	0.966	1	--	--	See Table 4-46	Yes	Not different from background, greater than reference based on 1 of 3 tests
Barium	3	3	53.4	58.1	50	50	48.6	134	0.976	1	1	--	--	153	153	45.2	294	0.995	1	1	--	--	No	No	Not different from reference or background
Cadmium	3	2	[0.04]	0.21	50	17	[0.03]	0.24	--	0.071	1	0.599	Equal	150	5	0.61	2.9	--	--	1	<0.001	Greater	See Table 4-46	Yes	Not different from reference, greater than background based on 1 of 2 tests
Calculated total uranium	75	74	[0.554]	2.14	50	27	[0.0834]	1.18	<0.001	<0.001	<0.001	<0.001	Greater	47	47	1.06	3.63	1	1	1	--	--	See Table 4-46	Yes	Greater than reference, not different from background
Chromium	65	65	6.8	226	50	50	4.5	14.4	<0.001	<0.001	<0.001	--	--	153	153	2.9	33.2	<0.001	0.003	<0.001	--	--	Yes	Yes	Greater than background and reference
Hexavalent chromium	110	41	[0.4]	10.4	50	24	[0.181]	0.489	--	<0.001	<0.001	0.268	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-46	Yes	Greater than reference based on 2 of 3 tests
Lead	70	61	1.9	31.9	50	50	3.6	9.1	0.999	0.817	0.006	--	--	153	153	1.1	74.1	1	0.976	1	--	--	See Table 4-46	Yes	Not different from background, greater than reference based on 1 of 3 tests
Lithium	3	3	8.2	10	50	50	4.1	11.4	0.099	0.51	1	--	--	75	21	34	38.2	--	1	1	--	--	No	No	Not different from reference or background
Mercury	52	22	[0.01]	1.8	50	2	[0.0189]	[0.025]	--	<0.001	<0.001	<0.001	Greater	151	30	0.1	3.8	--	0.611	1	0.003	Greater	See Table 4-46	Yes	Greater than reference, greater than background based on 1 of 3 tests
Sodium	3	3	298	397	50	50	84.7	247	No test	No test	No test	No test	No test	150	149	[101]	6,060	No test	No test	No test	No test	No test	No	No	Essential nutrient
Organics (mg/kg)																									
Aroclor-1242	59	9	[0.0001]	[0.35]	50	0	[0.013]	[0.013]	--	--	--	0.011	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-46	Yes	Greater than reference, 1 test
Aroclor-1260	59	34	[0.0001]	2.07	50	0	[0.013]	[0.013]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Bis[2-ethylhexyl] phthalate	3	3	0.049	0.15	50	38	0.017	[0.33]	0.097	0.473	1	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 3 tests
Fluoranthene	3	2	0.026	[0.35]	50	4	0.0019	0.018	--	--	<0.001	0.029	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Pyrene	3	2	0.024	[0.35]	50	15	0.00083	0.0084	--	0.088	<0.001	0.494	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-46	Yes	Greater than reference based on 1 of 3 tests
Radionuclides (pCi/g)																									
Americium-241	103	8	[-0.07]	[1.8]	60	3	[-0.025]	[0.4]	--	--	0.089	0.722	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 2 tests
Carbon-14	19	6	[0.406]	15.8	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-46	Yes	No reference data; no background data
Cesium-137	103	86	[0.01]	317	60	22	0.052	0.492	--	<0.001	<0.001	<0.001	Greater	55	55	-0.0017	1.78	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than background and reference
Cobalt-60	103	63	[0.011]	19	50	0	[0.054]	[0.18]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Europium-152	103	78	[0.027]	230	50	0	[0.11]	[0.34]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Europium-154	103	56	[0.035]	31	50	0	[0.13]	[0.55]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Europium-155	103	4	[0.034]	2.6	50	0	[0.097]	[0.27]	--	--	--	0.383	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-46	Yes	Not different from reference, 1 test
Nickel-63	68	41	[-1.61]	546	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-46	Yes	No reference data; no background data
Plutonium-238	103	9	[-0.027]	0.203	60	1	[-0.039]	[0.22]	--	--	0.042	0.14	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-46	Yes	Greater than reference based on 1 of 2 tests
Plutonium-239/240	103	54	[-0.039]	9.12	60	4	[-0.015]	[0.384]	--	<0.001	<0.001	<0.001	Greater	44	44	-0.005	0.0291	0.002	<0.001	<0.001	--	--	Yes	Yes	Greater than background and reference
Potassium-40	103	100	[0.71]	20.6	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-226	103	100	[0.046]	0.736	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide

Table 5-36. Summary of Statistical Comparisons to Reference and Background for 100-D/100-H Record of Decision Decision Area Deep Zone Soil Data. (2 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Radium-228	102	92	[0.096]	1.08	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Strontium-90	93	64	[-0.109]	28.8	60	4	[-0.086]	1.5	--	<0.001	<0.001	<0.001	Greater	28	28	0.008	0.348	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than background and reference
Technetium-99	37	2	[-0.248]	1.12	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-46	Yes	No reference data; no background data
Thorium-228	101	98	[0.05]	2.86	50	37	[0.191]	0.945	No test	No test	No test	No test	No test	49	49	0.529	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-232	102	92	[0.096]	1.08	50	41	[0.079]	0.891	No test	No test	No test	No test	No test	49	49	0.468	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Uranium-233/234	75	74	0.205	0.619	50	28	[0]	0.505	<0.001	<0.001	0.003	<0.001	Greater	92	92	0.286	1.51	1	1	1	--	--	See Table 4-46	Yes	Greater than reference, not different from background
Uranium-235	99	3	[-0.023]	[0.65]	50	0	[-0.017]	[0.093]	--	--	--	0.531	Equal	76	46	[0.00462]	0.386	--	1	1	<0.001	Less	See Table 4-46	Yes	Not different from background; not different from reference, 1 test
Uranium-238	75	74	[0.17]	0.708	50	27	[0.028]	0.397	<0.001	<0.001	<0.001	<0.001	Greater	92	92	0.297	1.23	1	1	1	--	--	See Table 4-46	Yes	Greater than reference, not different from background

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
No bkg data = no background site data available
No ref data = no reference site data available
No test = no statistical test performed

Table 5-37. Summary of Statistical Comparisons to Reference and Background for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Inorganics (mg/kg)																									
Aluminum	9	9	4,050	8,500	50	50	3,960	11,900	1	1	1	--	--	153	153	3,940	28,800	1	1	1	--	--	No	No	Not different from reference or background
Antimony	9	2	[0.279]	[2.6]	50	2	[0.2]	[0.66]	--	--	0.5	0.2	Equal	78	8	[11.8]	[29.1]	--	--	1	0.607	Equal	No	No	Not different from reference or background
Arsenic	9	5	[1.9]	3.6	50	50	1.6	4.4	0.989	0.892	1	--	--	150	133	3	27.7	1	1	1	0.019	Less	No	No	Not different from reference or background
Barium	38	38	27.8	82.7	50	50	48.6	134	1	1	1	--	--	153	153	45.2	294	1	1	1	--	--	No	No	Not different from reference or background
Beryllium	9	5	[0.15]	0.52	50	48	[0.005]	0.77	1	1	1	0.002	Less	150	137	[0.46]	2.5	1	1	1	0.005	Less	No	No	Not different from reference or background
Boron	5	5	0.954	2.8	50	46	[0.36]	2.7	0.837	0.649	0.091	--	--	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 3 tests
Cadmium	9	4	[0.028]	[0.35]	50	17	[0.03]	0.24	--	0.591	0.091	0.823	Equal	150	5	0.61	2.9	--	--	1	<0.001	Greater	See Table 4-47	Yes	Not different from reference, greater than background based on 1 of 2 tests
Calcium	9	9	2,140	6,670	50	50	2,820	9,000	No test	No test	No test	No test	No test	153	153	2,880	86,600	No test	No test	No test	No test	No test	No	No	Essential nutrient
Calculated total uranium	33	31	[0.473]	1.92	50	27	[0.0834]	1.18	<0.001	<0.001	<0.001	<0.001	Greater	47	47	1.06	3.63	1	1	1	--	--	See Table 4-47	Yes	Greater than reference, not different from background
Chromium	39	39	7.3	195	50	50	4.5	14.4	0.003	<0.001	<0.001	--	--	153	153	2.9	33.2	0.002	<0.001	<0.001	--	--	Yes	Yes	Greater than background and reference
Cobalt	24	24	4	7.3	50	50	6	12.5	1	1	1	--	--	151	151	5.7	26	1	1	1	--	--	No	No	Not different from reference or background
Copper	9	5	[11.1]	14.2	50	50	10.3	22.1	1	1	1	--	--	153	153	8.1	40.3	0.995	1	1	--	--	No	No	Not different from reference or background
Hexavalent chromium	100	42	[0.209]	11.2	50	24	[0.181]	0.489	--	<0.001	<0.001	0.601	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	Greater than reference based on 2 of 3 tests
Iron	9	9	8,550	20,800	50	50	17,200	28,900	1	1	1	--	--	153	153	12,300	53,600	1	1	1	--	--	No	No	Not different from reference or background
Lead	39	20	2.3	181	50	50	3.6	9.1	1	0.999	0.189	--	--	153	153	1.1	74.1	1	0.9992	0.2031	--	--	No	No	Not different from reference or background
Magnesium	9	9	3,130	4,440	50	50	3,500	6,370	No test	No test	No test	No test	No test	153	153	2,900	10,500	No test	No test	No test	No test	No test	No	No	Essential nutrient
Manganese	9	9	188	352	50	50	280	567	1	1	1	--	--	153	153	196	1,100	1	1	1	--	--	No	No	Not different from reference or background
Mercury	38	10	[0.013]	1.38	50	2	[0.0189]	[0.025]	--	--	0.016	0.007	Greater	151	30	0.1	3.8	--	0.6573	1	0.517	Equal	See Table 4-47	Yes	Greater than reference, not different from background
Molybdenum	5	4	0.211	0.621	50	15	[0.1]	0.94	--	0.649	1	0.08	Equal	96	9	2	4.3	--	--	1	<0.001	Greater	See Table 4-47	Yes	Not different from reference, greater than background based on 1 of 2 tests
Nickel	9	9	7.6	18.3	50	50	7.4	16.9	0.97	0.867	0.153	--	--	153	152	6.5	31.3	0.99	0.87	1	--	--	No	No	Not different from reference or background
Potassium	9	9	517	1,900	50	50	779	2,540	No test	No test	No test	No test	No test	150	150	851	7,900	No test	No test	No test	No test	No test	No	No	Essential nutrient
Silicon	5	5	177	601	50	50	198	502	No test	No test	No test	No test	No test	133	133	5.2	682	No test	No test	No test	No test	No test	No	No	Soil property measurement
Silver	9	2	[0.09]	0.65	50	0	[0.07]	[0.218]	--	--	--	0.017	Greater	150	49	[1.4]	14.6	--	1	1	0.776	Equal	See Table 4-47	Yes	Not different from background; greater than reference, 1 test
Sodium	9	6	133	261	50	50	84.7	247	No test	No test	No test	No test	No test	150	149	[101]	6,060	No test	No test	No test	No test	No test	No	No	Essential nutrient
Vanadium	9	9	19.4	44.8	50	50	37.7	71.6	1	1	1	--	--	153	153	24.3	105	1	1	1	--	--	No	No	Not different from reference or background
Zinc	9	9	21.8	64.2	50	50	36.1	58.4	0.9996	0.8665	0.1525	--	--	153	153	24.2	366	1	0.87	1	--	--	No	No	Not different from reference or background
Organics (mg/kg)																									
Aroclor-1248	48	3	[0.014]	[34]	50	0	[0.013]	[0.013]	--	--	--	0.227	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	Not different from reference, 1 test
Aroclor-1254	48	6	[0.014]	[34]	50	0	[0.013]	[0.013]	--	--	--	0.031	Greater	0	0	No bkg	No bkg	No bkg	No bkg	No bkg	No bkg data	No bkg	See Table	Yes	Greater than reference, 1 test

Table 5-37. Summary of Statistical Comparisons to Reference and Background for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
																data	data	data	data	data		data	4-47		
Aroclor-1260	48	2	[0.014]	62	50	0	[0.013]	[0.013]	--	--	--	0.457	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	Not different from reference, 1 test
Di-n-butylphthalate	2	1	0.0196	[0.33]	50	11	0.02	[0.34]	--	1	1	0.945	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Not different from reference, 3 tests
Toluene	1	1	0.001	0.001	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	No reference data; no background data
Radionuclides (pCi/g)																									
Americium-241	88	8	[-0.072]	5.26	60	3	[-0.025]	[0.4]	--	--	0.022	0.54	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	Greater than reference based on 1 of 2 tests
Carbon-14	73	17	[-2.63]	142	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	No reference data; no background data
Cesium-137	88	76	[0.034]	463	60	22	0.052	0.492	--	<0.001	<0.001	<0.001	Greater	55	55	-0.0017	1.78	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than background and reference
Cobalt-60	88	50	[0.028]	34.1	50	0	[0.054]	[0.18]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Europium-152	88	69	[0.07]	422	50	0	[0.11]	[0.34]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Europium-154	88	40	[0.04]	45.3	50	0	[0.13]	[0.55]	--	<0.001	--	<0.001	Greater	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	Yes	Yes	Greater than reference based on 2 tests
Gross alpha	5	4	[5.39]	12.5	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	No reference data; no background data
Gross beta	5	5	16.2	20.1	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	No reference data; no background data
Nickel-63	54	38	[-0.712]	1,360	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	No reference data; no background data
Plutonium-238	34	4	[-0.057]	0.659	60	1	[-0.039]	[0.22]	--	--	0.012	0.106	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	Greater than reference based on 1 of 2 tests
Plutonium-239/240	34	16	[-0.006]	17.1	60	4	[-0.015]	[0.384]	--	<0.001	<0.001	<0.001	Greater	44	44	-0.005	0.0291	--	<0.001	<0.001	--	--	Yes	Yes	Greater than background and reference
Plutonium-241	29	11	[-2.54]	30.2	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	No reference data; no background data
Potassium-40	88	86	[2.2]	43.2	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-226	88	68	[0.16]	[1.8]	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-228	88	66	0.413	[3.7]	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Strontium-90	77	60	[-0.067]	235	60	4	[-0.086]	1.5	--	<0.001	<0.001	<0.001	Greater	28	28	0.008	0.348	<0.001	<0.001	<0.001	--	--	Yes	Yes	Greater than background and reference
Thorium-228	88	70	0.329	[1.3]	50	37	[0.191]	0.945	No test	No test	No test	No test	No test	49	49	0.529	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Thorium-232	88	66	0.413	[3.7]	50	41	[0.079]	0.891	No test	No test	No test	No test	No test	49	49	0.468	1.58	No test	No test	No test	No test	No test	No	No	Background radionuclide
Tritium	30	15	[-0.104]	[0.857]	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-47	Yes	No reference data; no background data
Uranium-233/234	33	32	0.209	0.65	50	28	[0]	0.505	<0.001	<0.001	0.155	<0.001	Greater	92	92	0.286	1.51	1	1	1	--	--	See Table 4-47	Yes	Not different from background, greater than reference based on 3 of 4 tests
Uranium-235	88	2	[-0.098]	[1.2]	50	0	[-0.017]	[0.093]	--	--	--	0.739	Equal	76	46	[0.00462]	0.386	--	1	1	<0.001	Less	See Table 4-47	Yes	Not different from background; not different from reference, 1 test

Table 5-37. Summary of Statistical Comparisons to Reference and Background for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Uranium-238	33	31	[0.159]	0.643	50	27	[0.028]	0.397	<0.001	<0.001	<0.001	<0.001	Greater	92	92	0.297	1.23	1	1	1	--	--	See Table 4-47	Yes	Greater than reference, not different from background
Anions (mg/kg)																									
Chloride	4	4	6.8	14.3	10	10	0.155	0.63	0.003	0.066	<0.001	--	--	152	152	0.52	1,480	0.105	1	1	--	--	See Table 4-47	Yes	Not different from background, greater than reference based on 2 of 3 tests
Fluoride	4	4	0.9	71	10	8	0.315	1.14	0.004	0.066	0.011	--	--	152	150	0.94	73.3	0.03	0.025	1	--	--	See Table 4-47	Yes	Greater than background and reference based on 2 of 3 tests
Phosphate	4	2	[2]	2.6	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	153	45	[0.6]	225	--	0.347	1	0.738	Equal	No	No	Not different from reference, 3 tests
Sulfate	4	4	9	120	10	10	0.645	3.79	0.003	0.066	<0.001	--	--	153	153	1	4,340	0.053	0.589	1	--	--	See Table 4-47	Yes	Not different from background, greater than reference based on 2 of 3 tests

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
No bkg data = no background site data available
No ref data = no reference site data available
No test = no statistical test performed

Table 5-38. Summary of Statistical Comparisons to Reference and Background for 300 Record of Decision Decision Area Deep Zone Soil Data. (2 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Inorganics (mg/kg)																									
Arsenic	20	15	[0.309]	8.2	50	50	1.6	4.4	0.996	0.545	0.021	--	--	150	133	3	27.7	1	0.942	1	0.175	Equal	See Table 4-48	Yes	Not different from background, greater than reference based on 1 of 3 tests
Barium	11	11	66.5	104	50	50	48.6	134	0.677	1	1	--	--	153	153	45.2	294	0.803	1	1	--	--	No	No	Not different from reference or background
Cadmium	13	3	[0.04]	1.5	50	17	[0.03]	0.24	--	0.773	0.03	0.675	Equal	150	5	0.61	2.9	--	--	1	0.013	Greater	See Table 4-48	Yes	Greater than reference based on 1 of 3 tests; greater than background based on 1 of 2 tests
Calculated total uranium	27	26	[0.528]	26.6	50	27	[0.0834]	1.18	<0.001	<0.001	<0.001	<0.001	Greater	47	47	1.06	3.63	0.072	<0.001	<0.001	--	--	See Table 4-48	Yes	Greater than reference, greater than background based on 2 of 3 tests
Chromium	12	12	2.6	27.7	50	50	4.5	14.4	0.275	0.044	<0.001	--	--	153	153	2.9	33.2	0.484	0.444	1	--	--	See Table 4-48	Yes	Not different from background, greater than reference based on 2 of 3 tests
Lead	21	19	[0.23]	82.3	50	50	3.6	9.1	0.704	0.653	0.006	--	--	153	153	1.1	74.1	0.68	0.622	0.121	--	--	See Table 4-48	Yes	Not different from background, greater than reference based on 1 of 3 tests
Thallium	6	6	0.9	5.2	50	0	[0.3]	[1.1]	--	--	--	--	--	151	6	0.61	[3.7]	--	--	0.038	--	--	See Table 4-48	Yes	Greater than background, 1 test
Organics (mg/kg)																									
2-ButaNone	9	1	[0.01]	0.13	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	No reference data; no background data
Acetone	6	2	0.00501	0.016	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	No reference data; no background data
Aroclor-1248	15	1	[0.015]	[4.6]	50	0	[0.013]	[0.013]	--	--	--	0.52	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	Not different from reference, 1 test
Bis[2-ethylhexyl] phthalate	8	7	0.025	1.95	50	38	0.017	[0.33]	0.044	0.167	0.021	0.789	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	Greater than reference based on 2 of 4 tests
Butylbenzyl phthalate	7	1	0.076	[0.46]	50	0	[0.33]	[0.34]	--	--	--	0.246	Equal	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	Not different from reference, 1 test
Diethyl ether	3	1	0.001	[0.011]	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	No reference data; no background data
Hexadecanoic acid [9CI]	1	1	0.19	0.19	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	No reference data; no background data
Methylenechloride	6	6	0.0135	0.04	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	No reference data; no background data

Table 5-38. Summary of Statistical Comparisons to Reference and Background for 300 Record of Decision Decision Area Deep Zone Soil Data. (2 Pages)

Analyte	Remediated Waste Sites				Reference Sites				Reference Comparison					Background				Background Comparison					COPC?	Further Evaluation?	Notes
	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference	Number of Samples	Number of Detects	Minimum Value	Maximum Value	Gehan P-Value	Quantile P-Value	Slippage P-Value	Chi-Square P-Value	Detect Rate Difference			
Toluene	6	1	0.00481	[0.008]	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	No reference data; no background data
Total petroleum hydrocarbons - diesel range	9	5	[0.0129]	34	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	No reference data; no background data
Total petroleum hydrocarbons - kerosene range	6	2	[0.0129]	42	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	No reference data; no background data
Total petroleum hydrocarbons - motor oil (high boiling)	3	3	0.046	0.065	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	No reference data; no background data
Trichloromono-fluoromethane	3	1	[0.005]	0.012	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	See Table 4-48	Yes	No reference data; no background data
Radionuclides (pCi/g)																									
Potassium-40	6	6	7.06	15	50	50	5.9	14.4	No test	No test	No test	No test	No test	130	130	0.159	38.2	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-224	6	6	0.38	0.658	0	0	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	No ref data	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Radium-226	6	6	0.286	0.54	50	49	[0.197]	0.885	No test	No test	No test	No test	No test	66	66	0.298	1.16	No test	No test	No test	No test	No test	No	No	Background radionuclide
Radium-228	6	6	0.38	0.799	50	46	0.374	1.69	No test	No test	No test	No test	No test	0	0	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No bkg data	No	No	Background radionuclide
Uranium-233/234	27	26	[0.139]	8.6	50	28	[0]	0.505	<0.001	<0.001	<0.001	<0.001	Greater	92	92	0.286	1.51	0.118	<0.001	<0.001	--	--	See Table 4-48	Yes	Greater than reference, greater than background based on 2 of 3 tests
Uranium-235	27	10	[0]	0.512	50	0	[-0.017]	[0.093]	--	--	--	<0.001	Greater	76	46	[0.00462]	0.386	--	0.6537	0.067	0.06	Equal	See Table 4-48	Yes	Not different from background; greater than reference, 1 test
Uranium-238	27	26	[0.167]	8.87	50	27	[0.028]	0.397	<0.001	<0.001	<0.001	<0.001	Greater	92	92	0.297	1.23	0.021	<0.001	<0.001	--	--	Yes	Yes	Greater than background and reference

[value] = nondetect
-- = not applicable
COPC = contaminant of potential concern
No bkg data = no background site data available
No ref data = no reference site data available
No test = no statistical test performed

Table 5-39. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-B/C Record of Decision Decision Area Deep Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Antimony	Yes	Greater than reference sites (fails two of two tests); background uncertainty (fails one of two tests). All concentrations at waste sites 116-B-4 and 116-B-14 exceed the range measured in reference area samples. Potentially leachable based on K_d (K_d = 1.4 mL/g; see RCBRA Volume II, Appendix D, Section 6).
Calculated total uranium	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). Range of concentrations is well above reference area values. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Hexavalent chromium	Yes	Reference uncertainty (fails two of three tests); no background data. Range of concentrations is well above reference area values. Inclusion list analyte. Potentially leachable based on K_d (K_d = 0 mL/g; see RCBRA Volume II, Appendix D, Section 6).
Uranium-233/234	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). Range of concentrations is well above reference area values. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Uranium-235	Yes	Greater than reference sites (fails two of two tests); not different from background (fails zero of three tests). Not detected in reference area samples. Inclusion list analyte. Other uranium isotopes clearly present above reference area concentrations. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Uranium-238	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). Range of concentrations is well above reference area values. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
2-Methylnaphthalene	No	Reference uncertainty (fails zero of one test); no background data. Detected in one of two samples at 100-C-9:3 at a concentration of 1.1 J mg/kg. The detected value is within the range of detection limits in the CVP data.
Acenaphthene	No	Reference uncertainty (fails one of one test); no background data. Relatively low volatility (mol wt = 154 g/mol) and insoluble; no potential for exposure from deep zone soil.
Acetone	No	No reference data; no background data. Acetone is a common lab contaminant and readily degraded at low soil concentrations. It was detected at a maximum concentration of 0.012 mg/kg, which is within the range of nondetect values in the CVP data. The very low concentrations are inconsistent with the presence of a significant amount of soil contamination from which to model chronic exposure via diffusion over time from deep zone soil to the ground surface.
Americium-241	No	Greater than reference sites (fails three of three tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Anthracene	No	Reference uncertainty (fails one of three tests); no background data. Relatively low volatility (mol wt = 178 g/mol) and insoluble; no potential for exposure from deep zone soil.
Aroclor-1254	No	Reference uncertainty (fails zero of one test); no background data. Very low volatility and insoluble; no potential for exposure from deep zone soil.
Benzo[a]anthracene	No	Reference uncertainty (fails one of two tests); no background data. Low volatility (mol wt = 228 g/mol) and insoluble; no potential for exposure from deep zone soil.
Benzo[a]pyrene	No	Reference uncertainty (fails one of three tests); no background data. Low volatility (mol wt = 252 g/mol) and insoluble; no potential for exposure from deep zone soil.
Benzo[b]fluoranthene	No	Reference uncertainty (fails one of three tests); no background data. Low volatility (mol wt = 252 g/mol) and insoluble; no potential for exposure from deep zone soil.

Table 5-39. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-B/C Record of Decision Decision Area Deep Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Benzo[ghi]perylene	No	Reference uncertainty (fails one of two tests); no background data. Low volatility (mol wt = 276 g/mol) and insoluble; no potential for exposure from deep zone soil.
Benzo[k]fluoranthene	No	Reference uncertainty (fails one of two tests); no background data. Low volatility (mol wt = 252 g/mol) and insoluble; no potential for exposure from deep zone soil.
Cadmium	No	Reference uncertainty (fails one of three tests); background uncertainty (fails one of two tests). Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Carbazole	No	Reference uncertainty (fails one of one test); no background data. The detected concentrations are well below the range of nondetect values in the CVP data.
Cesium-137	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 50 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Chromium	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 200 mL/g for trivalent chromium; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Chrysene	No	Reference uncertainty (fails one of three tests); no background data. Low volatility (mol wt = 228 g/mol) and insoluble; no potential for exposure from deep zone soil.
Cobalt-60	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 50 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Dibenz[a,h]anthracene	No	Reference uncertainty (fails zero of one test); no background data. Low volatility (mol wt = 278 g/mol) and insoluble; no potential for exposure from deep zone soil.
Dibenzofuran	No	Reference uncertainty (fails zero of one test); no background data. Very low volatility and insoluble; no potential for exposure from deep zone soil.
Europium-152	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Europium-154	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Europium-155	No	Reference uncertainty (fails one of one test); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Fluoranthene	No	Reference uncertainty (fails one of two tests); no background data. Relatively low volatility (mol wt = 202 g/mol) and insoluble; no potential for exposure from deep zone soil.
Fluorene	No	Reference uncertainty (fails one of three tests); no background data. Relatively low volatility (mol wt = 166 g/mol) and insoluble; no potential for exposure from deep zone soil.
Gross alpha	No	No reference data; no background data. No toxicity data; specific nuclides evaluated in the risk assessment.
Gross beta	No	No reference data; no background data. No toxicity data; specific nuclides evaluated in the risk assessment.
Indeno[1,2,3-cd]pyrene	No	Reference uncertainty (fails one of two tests); no background data. Low volatility (mol wt = 276 g/mol) and insoluble; no potential for exposure from deep zone soil.

Table 5-39. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-B/C Record of Decision Decision Area Deep Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Isophorone	No	Reference uncertainty (fails zero of one test); no background data. Detected in one of six samples at 0.28 J mg/kg. This value is below the range of sample-specific detection limits.
Lead	No	Reference uncertainty (fails two of three tests); not different from background (fails zero of three tests). Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Mercury	No	Greater than reference sites (fails three of three tests); background uncertainty (fails two of three tests). Not volatile in inorganic forms. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Methylenechloride	No	No reference data; no background data. Methylene chloride is a common lab contaminant. It was detected at a concentration of 0.008 mg/kg, which is within the range of nondetect values in the CVP data. The very low concentration is inconsistent with the presence of a significant amount of soil contamination from which to model chronic exposure via diffusion over time from deep zone soil to the ground surface.
Molybdenum	No	Reference uncertainty (fails one of two tests); background uncertainty (fails zero of one test). Not volatile. Not leachable based on K_d (K_d = 20 mL/g; Oak Ridge National Laboratory Risk Assessment Information System, http://rais/ornl.gov). No complete exposure pathway for deep zone soil.
Nickel-63	No	No reference data; no background data. Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Niobium-94	No	No reference data; no background data. This analyte was only measured at the 116-B-4 and 116-F-4 waste sites. The single measurement at 116-B-4 was the only detection (0.336 pCi/g). The minimal detectable activity is approximately 0.04 pCi/g. No information on the K_d of this element was discovered, so there is no basis for modeling possible groundwater impacts.
Phenanthrene	No	Reference uncertainty (fails one of three tests); no background data. Relatively low volatility (mol wt = 178 g/mol) and insoluble; no potential for exposure from deep zone soil.
Plutonium-238	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Plutonium-239/240	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Pyrene	No	Reference uncertainty (fails one of three tests); no background data. Relatively low volatility (mol wt = 202 g/mol) and insoluble; no potential for exposure from deep zone soil.
Silver	No	Reference uncertainty (fails one of one test); not different from background (fails zero of three tests). Not volatile. Not leachable based on K_d (K_d = 90 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.

Table 5-39. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-B/C Record of Decision Decision Area Deep Zone Soil Data. (4 Pages)

Analyte	COPC?	Explanation
Strontium-90	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 25 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.

COPC = contaminant of potential concern
CVP = cleanup verification package
RCBRA = River Corridor Baseline Risk Assessment

Table 5-40. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-K Record of Decision Decision Area Deep Zone Soil Data. (2 Pages)

Analyte	COPC?	Explanation
Calculated total uranium	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). Site data are statistically elevated relative to reference area. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Hexavalent chromium	Yes	Greater than reference sites (fails three of three tests); no background data. Potentially leachable based on K_d (K_d = 0 mL/g; see RCBRA Volume II, Appendix D, Section 6).
Uranium-233/234	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). Site data are statistically elevated relative to reference area. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Uranium-238	Yes	Greater than reference sites (fails three of three tests); not different from background (fails zero of three tests). Site data are statistically elevated relative to reference area. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Americium-241	No	Greater than reference sites (fails three of three tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Carbon-14	No	No reference data; no background data. Migration in pore gas dependent on mineralization to carbon dioxide. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Cesium-137	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 50 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Chromium	No	Reference uncertainty (fails two of three tests); not different from background (fails zero of three tests). Not volatile. Not leachable based on K_d (K_d = 200 mL/g for trivalent chromium; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Cobalt-60	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 50 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Europium-152	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.

Table 5-40. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-K Record of Decision Decision Area Deep Zone Soil Data. (2 Pages)

Analyte	COPC?	Explanation
Europium-154	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Nickel-63	No	No reference data; no background data. Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Plutonium-238	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Plutonium-239/240	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Strontium-90	No	Greater than reference sites (fails two of two tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 25 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Uranium-235	No	Reference uncertainty (fails zero of one test); not different from background (fails zero of three tests). The detected values are below common minimal detectable activity. Approximately 50% of the U-235 data in the 100-K Area are censored.

COPC = contaminant of potential concern
RCBRA = River Corridor Baseline Risk Assessment

Table 5-41. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-N Record of Decision Decision Area Deep Zone Soil Data. (2 Pages)

Analyte	COPC?	Explanation
Americium-241	No	Greater than reference sites (fails three of three tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Cesium-137	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 50 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Cobalt-60	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 50 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Plutonium-238	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Plutonium-239/240	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Strontium-90	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 25 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.

Table 5-41. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-N Record of Decision Decision Area Deep Zone Soil Data. (2 Pages)

Analyte	COPC?	Explanation
Europium-154	No	Reference uncertainty (fails zero of one test); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Nickel-63	No	No reference data; no background data. Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Nitrogen in nitrite and nitrate	No	Reference uncertainty (fails one of three tests); no background data. All data are from focused samples at the 116-N-3 waste site. The slippage test for evaluating the highest values fails with a barely significant p-value of 0.033. Site concentrations not clearly elevated relative to the reference area based on data review.
Uranium-235	No	Reference uncertainty (fails zero of one test); not different from background (fails zero of three tests). All data are from the 116-N-3 waste site. All of the U-235 deep zone data in the 100-N Area are censored.

COPC = contaminant of potential concern
RCBRA = *River Corridor Baseline Risk Assessment*

Table 5-42. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-D/100-H Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Arsenic	Yes	Reference uncertainty (fails one of three tests); not different from background (fails zero of three tests). One-third of the statistical samples at the 100-H-21 and 116-H-1 waste sites exceed the maximum value in the reference area. Potentially leachable based on K_d (K_d = 3 mL/g; see RCBRA Volume II, Appendix D, Section 6).
Calculated total uranium	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Site data are statistically elevated relative to reference area. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Hexavalent chromium	Yes	Reference uncertainty (fails two of three tests); no background data. Range of concentrations is well above reference area values. Inclusion list analyte. Potentially leachable based on K_d (K_d = 0 mL/g; see RCBRA Volume II, Appendix D, Section 6).
Technetium-99	Yes	No reference data; no background data. The 118-DR-2:2 and 116-H-7 waste sites have disproportionally many higher values. Data are uncensored. Potentially leachable based on K_d (K_d = 0 mL/g; see RCBRA Volume II, Appendix D, Section 6).
Uranium-233/234	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Site data are statistically elevated relative to reference area. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Uranium-235	Yes	Reference uncertainty (fails zero of one test); not different from background (fails zero of three tests). Not detected in reference area samples. Inclusion list analyte. Detected in two of six samples at 100-D-49:4 waste site. Most data are uncensored. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).

Table 5-42. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-D/100-H Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Uranium-238	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Site data are statistically elevated relative to reference area. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Aroclor-1242	No	Reference uncertainty (fails one of one test); no background data. Very low volatility and insoluble; no potential for exposure from deep zone soil.
Aroclor-1260	No	Greater than reference sites (fails two of two tests); no background data. Very low volatility and insoluble; no potential for exposure from deep zone soil.
Cadmium	No	Not different from reference sites (fails zero of three tests); background uncertainty (fails one of two tests). Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Carbon-14	No	No reference data; no background data. Migration in pore gas dependent on mineralization to carbon dioxide. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Cesium-137	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 50 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Chromium	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 200 mL/g for trivalent chromium; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Cobalt-60	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 50 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Europium-152	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Europium-154	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Europium-155	No	Reference uncertainty (fails zero of one test); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Fluoranthene	No	Greater than reference sites (fails two of two tests); no background data. Relatively low volatility (mol wt = 202 g/mol) and insoluble; no potential for exposure from deep zone soil.
Lead	No	Reference uncertainty (fails one of three tests); not different from background (fails zero of three tests). Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Mercury	No	Greater than reference sites (fails three of three tests); background uncertainty (fails one of three tests). Not volatile in inorganic forms. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Nickel-63	No	No reference data; no background data. Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.

Table 5-42. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-D/100-H Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Plutonium-238	No	Reference uncertainty (fails one of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Plutonium-239/240	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Pyrene	No	Reference uncertainty (fails one of three tests); no background data. Relatively low volatility (mol wt = 202 g/mol) and insoluble; no potential for exposure from deep zone soil.
Strontium-90	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 25 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.

COPC = contaminant of potential concern
RCBRA = *River Corridor Baseline Risk Assessment*

Table 5-43. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Calculated total uranium	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Site data are statistically elevated relative to reference area. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Hexavalent chromium	Yes	Reference uncertainty (fails two of three tests); no background data. Range of concentrations is well above reference area values. Inclusion list analyte. Potentially leachable based on K_d (K_d = 0 mL/g; see RCBRA Volume II, Appendix D, Section 6).
Tritium	Yes	No reference data; no background data. Detected in 50% of samples at concentrations above the range of minimal detectable activities. Potentially leachable based on K_d (K_d = 0 mL/g; see RCBRA Volume II, Appendix D, Section 6).
Uranium-233/234	Yes	Reference uncertainty (fails three of four tests); not different from background (fails zero of three tests). The range of site values is not greater than the reference area. However, both calculated total uranium and uranium-238 fail the slippage test for evaluating the highest values. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Uranium-238	Yes	Greater than reference sites (fails four of four tests); not different from background (fails zero of three tests). Site data are statistically elevated relative to reference area. Inclusion list analyte. Potentially leachable based on K_d (K_d = 2 mL/g in the 100 Area; see RCBRA Volume II, Appendix D, Section 6).
Americium-241	No	Reference uncertainty (fails one of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Aroclor-1248	No	Reference uncertainty (fails zero of one test); no background data. Very low volatility and insoluble; no potential for exposure from deep zone soil.

Table 5-43. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Aroclor-1254	No	Reference uncertainty (fails one of one test); no background data. Very low volatility and insoluble; no potential for exposure from deep zone soil.
Aroclor-1260	No	Reference uncertainty (fails zero of one test); no background data. Very low volatility and insoluble; no potential for exposure from deep zone soil.
Cadmium	No	Not different from reference sites (fails zero of three tests); background uncertainty (fails one of two tests). Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Carbon-14	No	No reference data; no background data. Migration in pore gas dependent on mineralization to carbon dioxide. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Cesium-137	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 50 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Chloride	No	Reference uncertainty (fails two of three tests); not different from background (fails zero of three tests). No toxicity data; an essential electrolyte.
Chromium	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 200 mL/g for trivalent chromium; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Cobalt-60	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 50 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Europium-152	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Europium-154	No	Greater than reference sites (fails two of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Fluoride	No	Reference uncertainty (fails two of three tests); background uncertainty (fails two of three tests). Not volatile. Not leachable based on K_d (K_d = 150 mL/g; Oak Ridge National Laboratory Risk Assessment Information System, http://rais/ornl.gov). No complete exposure pathway for deep zone soil.
Gross alpha	No	No reference data; no background data. No toxicity data; specific nuclides evaluated in the risk assessment.
Gross beta	No	No reference data; no background data. No toxicity data; specific nuclides evaluated in the risk assessment.
Mercury	No	Greater than reference sites (fails two of two tests); not different from background (fails zero of three tests). Not volatile in inorganic forms. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Molybdenum	No	Not different from reference sites (fails zero of three tests); background uncertainty (fails one of two tests). Not volatile. Not leachable based on K_d (K_d = 20 mL/g; Oak Ridge National Laboratory Risk Assessment Information System, http://rais/ornl.gov). No complete exposure pathway for deep zone soil.

Table 5-43. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-F/100-IU-2/100-IU-6 Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Nickel-63	No	No reference data; no background data. Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Plutonium-238	No	Reference uncertainty (fails one of two tests); no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Plutonium-239/240	No	Greater than reference sites (fails three of three tests); greater than background (fails two of two tests). Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Plutonium-241	No	No reference data; no background data. Not volatile. Not leachable based on K_d (K_d = 200 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Silver	No	Reference uncertainty (fails one of one test); not different from background (fails zero of three tests). Not volatile. Not leachable based on K_d (K_d = 90 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Strontium-90	No	Greater than reference sites (fails three of three tests); greater than background (fails three of three tests). Not volatile. Not leachable based on K_d (K_d = 25 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Sulfate	No	Reference uncertainty (fails two of three tests); not different from background (fails zero of three tests). No toxicity data; a major anion and part of soil properties evaluation.
Toluene	No	No reference data; no background data. Detected at 0.001 mg/kg, well below common detection limits in other CVP data.
Uranium-235	No	Reference uncertainty (fails zero of one test); not different from background (fails zero of three tests). The detected values are below common minimal detectable activity. The majority of the U-235 data in the 100-F/100-IU-2/100-IU-6 area are censored.

COPC = contaminant of potential concern
CVP = cleanup verification package
RCBRA = *River Corridor Baseline Risk Assessment*

Table 5-44. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 300 Area Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Arsenic	Yes	Reference uncertainty (fails one of three tests); not different from background (fails zero of four tests). Two of four statistical samples at the 618-5 waste site exceed the maximum value in the reference area. Potentially leachable based on K_d (K_d = 3 mL/g; see RCBRA Volume II, Appendix D, Section 6).
Calculated total uranium	Yes	Greater than reference sites (fails four of four tests); background uncertainty (fails two of three tests). Range of concentrations is well above reference area and Hanford background. Inclusion list analyte. Potentially leachable based on K_d (K_d = 0 mL/g in uncontaminated vadose and saturated zone in the 300 Area; see RCBRA Volume II, Appendix D, Section 6).

Table 5-44. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 300 Area Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Uranium-233/234	Yes	Greater than reference sites (fails four of four tests); background uncertainty (fails two of three tests). Range of concentrations is well above reference area and Hanford background. Inclusion list analyte. Potentially leachable based on K_d (K_d = 0 mL/g in uncontaminated vadose and saturated zone in the 300 Area; see RCBRA Volume II, Appendix D, Section 6).
Uranium-235	Yes	Reference uncertainty (fails one of one test); not different from background (fails zero of three tests). Not detected in reference area samples. Inclusion list analyte. Other uranium isotopes clearly present above reference area concentrations. Potentially leachable based on K_d (K_d = 0 mL/g in uncontaminated vadose and saturated zone in the 300 Area; see RCBRA Volume II, Appendix D, Section 6).
Uranium-238	Yes	Greater than reference sites (fails four of four tests); greater than background (fails three of three tests). Potentially leachable based on K_d (K_d = 0 mL/g in uncontaminated vadose and saturated zone in the 300 Area; see RCBRA Volume II, Appendix D, Section 6).
2-Butanone	No	No reference data; no background data. All 300 Area VOC data are from 618-4. 2-butanone (syn methyl ethyl ketone) is a common lab contaminant and readily degraded at low soil concentrations. It was detected at a concentration of 0.13 mg/kg. The very low concentration is inconsistent with the presence of a significant amount of soil contamination from which to model chronic exposure via diffusion over time from deep zone soil to the ground surface.
Acetone	No	No reference data; no background data. All 300 Area VOC data are from 618-4. Acetone is a common lab contaminant and readily degraded at low soil concentrations. It was detected at a maximum concentration of 0.016 mg/kg, which is within the range of nondetect values in the CVP data. The very low concentrations are inconsistent with the presence of a significant amount of soil contamination from which to model chronic exposure via diffusion over time from deep zone soil to the ground surface.
Aroclor-1248	No	Reference uncertainty (fails zero of one test); no background data. Very low volatility and insoluble; no potential for exposure from deep zone soil.
Bis[2-ethylhexyl] phthalate	No	Reference uncertainty (fails two of four tests); no background data. Very low volatility and insoluble; no potential for exposure from deep zone soil.
Butylbenzylphthalate	No	Reference uncertainty (fails zero of one test); no background data. Very low volatility and insoluble; no potential for exposure from deep zone soil.
Cadmium	No	Reference uncertainty (fails one of three tests); background uncertainty (fails one of two tests). Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Chromium	No	Reference uncertainty (fails two of three tests); not different from background (fails zero of three tests). Not volatile. Not leachable based on K_d (K_d = 200 mL/g for trivalent chromium; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Diethyl ether	No	No reference data; no background data. All 300 Area VOC data are from 618-4. Diethyl ether was the ether used as an anaesthetic in medical practice. It was detected at a concentration of 0.001 mg/kg, well below the nondetect values (0.01 and 0.011 mg/kg). The very low concentration is inconsistent with the presence of a significant amount of soil contamination from which to model chronic exposure via diffusion over time from deep zone soil to the ground surface.
Hexadecanoic acid [9CI]	No	No reference data; no background data. No available toxicity criteria. Evaluated in the toxicity assessment of the human health risk assessment.

Table 5-44. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 300 Area Record of Decision Decision Area Deep Zone Soil Data. (3 Pages)

Analyte	COPC?	Explanation
Lead	No	Reference uncertainty (fails one of three tests); not different from background (fails zero of three tests). Not volatile. Not leachable based on K_d (K_d = 30 mL/g; see RCBRA Volume II, Appendix D, Section 6). No complete exposure pathway for deep zone soil.
Methylenechloride	No	No reference data; no background data. All 300 Area VOC data are from 618-4. The methylene chloride data range from approximately 0.014 to 0.04 mg/kg, with a mean of 0.027 mg/kg. Detected concentrations in the 100-B/C and 100-F/100-IU-2/100-IU-6 Areas are all below 0.02 mg/kg. Although methylene chloride is a common laboratory contaminant, the 300 Area values may reflect slight residual soil contamination. However, the very low concentrations are inconsistent with the presence of a significant amount of soil contamination from which to model chronic exposure via diffusion over time from deep zone soil to the ground surface.
Thallium	No	Reference uncertainty (fails zero of zero tests); background uncertainty (fails one of one test). Not volatile. Not leachable based on K_d (K_d = 71 mL/g; Oak Ridge National Laboratory Risk Assessment Information System, http://rais/ornl.gov). No complete exposure pathway for deep zone soil.
Toluene	No	No reference data; no background data. All 300 Area VOC data are from 618-4. Toluene was detected at a concentration of 0.0048 J mg/kg, below the range of nondetect values of (0.006 to 0.008 mg/kg).
Total petroleum hydrocarbons - diesel range	No	No reference data; no background data. No toxicity criteria; specific components of TPH are evaluated.
Total petroleum hydrocarbons - kerosene range	No	No reference data; no background data. No toxicity criteria; specific components of TPH are evaluated.
Total petroleum hydrocarbons-motor oil (high boiling)	No	No reference data; no background data. No toxicity criteria; specific components of TPH are evaluated.
Trichloromonofluoro-methane	No	No reference data; no background data. All 300 Area VOC data are from 618-4. Trichloromonofluoromethane was detected at 0.012 mg/kg, about twice the nondetect values of 0.005 and 0.006 mg/kg. The very low concentration is inconsistent with the presence of a significant amount of soil contamination from which to model chronic exposure via diffusion over time from deep zone soil to the ground surface.

COPC = contaminant of potential concern
CVP = cleanup verification package
RCBRA = *River Corridor Baseline Risk Assessment*
TPH = total petroleum hydrocarbons
VOC = volatile organic compound

Table 5-45. Summary of Contaminant of Potential Concern for Deep Zone Soil Data.

Analyte	Number of Samples	Number of Detects
100-B/C ROD Area		
Antimony	12	6
Calculated total uranium	96	96
Hexavalent chromium	106	63
Uranium-233/234	96	96
Uranium-235	99	37
Uranium-238	96	96
100-K ROD Area		
Calculated total uranium	24	24
Hexavalent chromium	33	24
Uranium-233/234	24	24
Uranium-238	24	24
100-D/100-H ROD Area		
Arsenic	38	38
Calculated total uranium	75	74
Hexavalent chromium	110	41
Technetium-99	37	2
Uranium-233/234	75	74
Uranium-235	99	3
Uranium-238	75	74
100-F/100-IU-2/100-IU-6 ROD Area		
Calculated total uranium	33	31
Hexavalent chromium	100	42
Tritium	30	15
Uranium-233/234	33	32
Uranium-238	33	31
300 ROD Area		
Arsenic	20	15
Calculated total uranium	27	26
Uranium-233/234	27	26
Uranium-235	27	10
Uranium-238	27	26

ROD = record of decision

Table 5-46. Contaminants of Potential Concern That May Potentially Leach to Groundwater by Record of Decision Decision Area.

Analyte	300 Area	100-B/C	100-D/ 100-H	100-F/100-IU-2/ 100-IU-6	100-K	100-N
Shallow Zone Soil						
Antimony						
Arsenic	X		X	X	X	
Boron		X		X		
Calculated total uranium	X	X	X	X	X	
Hexavalent chromium		X	X	X	X	
Nitrogen in nitrate						X
Technetium-99			X			
Tritium						
Uranium-233/234	X	X	X	X	X	
Uranium-235	X	X	X			
Uranium-238	X	X	X	X	X	
Deep Zone Soil						
Antimony		X				
Arsenic	X		X			
Boron						
Calculated total uranium	X	X	X	X	X	
Hexavalent chromium		X	X	X	X	
Nitrogen in nitrate						
Technetium-99			X			
Uranium-233/234	X	X	X	X	X	
Tritium				X		
Uranium-235	X	X	X			
Uranium-238	X	X	X	X	X	

Table 5-47. Background and Reference Area Concentrations of Shallow Zone Soil Contaminants of Potential Concern. (2 Pages)

COPC	Hanford Area Background 90th Percentile [a]	Yakima Basin Washington State Background 90th Percentile [b]	Upland Reference Area CTE for Risk Calculation [c]	Upland Reference Area RME for Risk Calculation [c]
Arsenic	6.47	5.13	2.8	3.2
Barium	132	--	88	103
Beryllium	1.51	1.57	0.53	0.60
Boron	NA	--	1.6	1.9
Cadmium	NA	0.93	0.14	0.18
Chromium	18.5	38.27	9.9	12
Copper	22	26.47	15	17
Fluoride	2.81	--	0.52	0.66
Hexavalent chromium	--	--	0.29	0.33
Lead	10.2	11	5.9	6.9
Mercury	0.33	0.05	0.022	0.022
Nickel	19.1	45.89	11.4	13

Table 5-47. Background and Reference Area Concentrations of Shallow Zone Soil Contaminants of Potential Concern. (2 Pages)

COPC	Hanford Area Background 90th Percentile [a]	Yakima Basin Washington State Background 90th Percentile [b]	Upland Reference Area CTE for Risk Calculation [c]	Upland Reference Area RME for Risk Calculation [c]
Nitrogen in nitrite and nitrate	12 [d]	--	0.71	0.78
Silver	0.73	--	NA	NA
Uranium (inorganic)	3.205 [e]	--	3.1	3.1
Zinc	67.8	78.71	47	50
Aroclor-1248	--	--	NA	NA
Aroclor-1254	--	--	NA	NA
Aroclor-1260	--	--	NA	NA
Dichlorodiphenyltrichloroethane	--	--	NA	NA
Ethylene glycol	--	--	--	--
Carbon-14	--	--	--	--
Cesium-137	1.05	--	0.11	0.14
Cobalt-60	NA	--	NA	NA
Europium-152	NA	--	NA	NA
Europium-154	NA	--	NA	NA
Nickel-63	--	--	--	--
Plutonium-239/240	0.0248	--	0.047	0.047
Strontium-90	0.178	--	0.073	0.073
Technetium-99	--	--	--	--
Uranium-233/234	1.1	--	0.17	0.21
Uranium-235	0.109	--	NA	NA
Uranium-238	1.06	--	0.18	0.20

[a] Inorganic values from Summary Table 2 of DOE/RL-92-24, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Rev. 3, Volume 1 of 2, October 1995. Radionuclide values from Table 5-1 of DOE/RL-96-12, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Rev 0. Representative of the upper range of naturally occurring background levels.
[b] Values from Table 17 of *Natural Background Soil Metals Concentrations in Washington State*, Washington State Department of Ecology, Publication 94-115. Representative of the upper range of naturally occurring background levels.
[c] These values were calculated using the same statistical protocol as the representative concentrations for the individual remediated waste sites. The values are *not* intended to be representative of the upper range of naturally-occurring background levels.
[d] A value of 52 mg/kg was reported. Converted to N in nitrate: 52 mg/kg * (14 g per mol N / 62 g per mol nitrate).
[e] Calculated from isotopic uranium soil concentrations (DOE/RL-96-12) and specific activities for U-234, U-235, and U-238.

-- = not applicable. Not analyzed for this data set.
CTE = central tendency exposure
NA = not available. Not detected in any sample, or too few detects to estimate a value.
RME = reasonable maximum exposure

Table 5-48. Cancer Risks Related to Reference Area Concentrations of Shallow Zone Soil Contaminants of Potential Concern. (2 Pages)

COPC	Industrial/ Commercial	Monument Worker	Subsistence Farmer	CTUIR Resident	Yakama Resident
Reasonable Maximum Exposure					
Arsenic	9.E-07	2.E-06	5.E-04	8.E-03	8.E-03
Barium	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Beryllium	3.E-10	9.E-10	1.E-09	3.E-09	3.E-09
Boron	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Cadmium	6.E-11	2.E-10	3.E-10	7.E-10	7.E-10
Chromium	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Copper	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Fluoride	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Hexavalent chromium	7.E-10	2.E-09	3.E-09	9.E-09	9.E-09
Lead	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Mercury	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Nickel	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Nitrogen in nitrite and nitrate	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Silver	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Uranium (inorganic)	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Zinc	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Aroclor-1248	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Aroclor-1254	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Aroclor-1260	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Dichlorodiphenyltri-chloroethane	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Ethylene glycol	--	--	--	--	--
Carbon-14	--	--	--	--	--
Cesium-137	2.E-06	6.E-06	9.E-06	3.E-05	3.E-05
Cobalt-60	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Europium-152	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Europium-154	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Nickel-63	--	--	--	--	--
Plutonium-239/240	4.E-09	8.E-09	3.E-08	4.E-07	4.E-07
Strontium-90	1.E-08	3.E-08	1.E-05	8.E-05	1.E-04
Technetium-99	--	--	--	--	--
Uranium-233/234	1.E-08	2.E-08	7.E-07	2.E-06	3.E-06
Uranium-235	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Uranium-238	1.E-07	4.E-07	1.E-06	4.E-06	4.E-06
Central Tendency Exposure					
Arsenic	1.E-07	2.E-07	5.E-05		
Barium	NA[a]	NA[a]	NA[a]		
Beryllium	6.E-11	2.E-10	3.E-10		
Boron	NA[a]	NA[a]	NA[a]		
Cadmium	1.E-11	4.E-11	7.E-11		
Chromium	NA[a]	NA[a]	NA[a]		
Copper	NA[a]	NA[a]	NA[a]		
Fluoride	NA[a]	NA[a]	NA[a]		
Hexavalent chromium	2.E-10	6.E-10	1.E-09		
Lead	NA[a]	NA[a]	NA[a]		
Mercury	NA[a]	NA[a]	NA[a]		
Nickel	NA[a]	NA[a]	NA[a]		

Table 5-48. Cancer Risks Related to Reference Area Concentrations of Shallow Zone Soil Contaminants of Potential Concern. (2 Pages)

COPC	Industrial/ Commercial	Monument Worker	Subsistence Farmer	CTUIR Resident	Yakama Resident
Nitrogen in nitrite and nitrate	NA[a]	NA[a]	NA[a]		
Silver	NA[b]	NA[b]	NA[b]		
Uranium (inorganic)	NA[a]	NA[a]	NA[a]		
Zinc	NA[a]	NA[a]	NA[a]		
Aroclor-1248	NA[b]	NA[b]	NA[b]		
Aroclor-1254	NA[b]	NA[b]	NA[b]		
Aroclor-1260	NA[b]	NA[b]	NA[b]		
Dichlorodiphenyltri-chloroethane	NA[b]	NA[b]	NA[b]		
Ethylene glycol	--	--	--		
Carbon-14	--	--	--		
Cesium-137	4.E-07	1.E-06	2.E-06		
Cobalt-60	NA[b]	NA[b]	NA[b]		
Europium-152	NA[b]	NA[b]	NA[b]		
Europium-154	NA[b]	NA[b]	NA[b]		
Nickel-63	--	--	--		
Plutonium-239/240	6.E-10	1.E-09	5.E-09		
Strontium-90	3.E-09	7.E-09	1.E-06		
Technetium-99	--	--	--		
Uranium-233/234	1.E-09	3.E-09	9.E-08		
Uranium-235	NA[b]	NA[b]	NA[b]		
Uranium-238	3.E-08	8.E-08	2.E-07		

NOTE: Only "Reasonable Maximum Exposure" CTUIR Resident and Yakama Resident results were calculated, based on parameter values published in Harris, S., and B. L. Harper, 2004, *Exposure Scenario for the CTUIR Traditional Subsistence Lifeways*, Department of Natural Resources, Pendleton, Oregon and Ridolfi, 2007, *Yakama Nation Exposure Scenario for Hanford Site Risk Assessment, Richland, Washington,* Prepared for the Yakama Nation ERWM Program by Ridolfi Inc., Seattle, Washington.

[a] No carcinogenic toxicity criteria are published. Evaluated for noncarcinogenic effects.
[b] Not detected in any sample.

-- = not applicable. Not analyzed in Reference Area soil samples.
COPC = contaminant of potential concern
CTUIR = Confederated Tribes of the Umatilla Indian Reservation
NA = not available

Table 5-49. Radiation Dose Related to Reference Area Concentrations of Shallow Zone Soil Contaminants of Potential Concern. (2 Pages)

COPC	Industrial/ Commercial	Monument Worker	Subsistence Farmer	CTUIR Resident	Yakama Resident
Reasonable Maximum Exposure					
Carbon-14	--	--	--	--	--
Cesium-137	0.11	0.30	0.41	0.46	0.54
Cobalt-60	NA	NA	NA	NA	NA
Europium-152	NA	NA	NA	NA	NA
Europium-154	NA	NA	NA	NA	NA
Nickel-63	--	--	--	--	--
Plutonium-239/240	0.00064	0.0013	0.0056	0.025	0.021
Strontium-90	0.00051	0.0013	0.75	1.8	2.3

Table 5-49. Radiation Dose Related to Reference Area Concentrations of Shallow Zone Soil Contaminants of Potential Concern. (2 Pages)

COPC	Industrial/ Commercial	Monument Worker	Subsistence Farmer	CTUIR Resident	Yakama Resident
Technetium-99	--	--	--	--	--
Uranium-233/234	0.00054	0.0011	0.062	0.060	0.069
Uranium-235	NA	NA	NA	NA	NA
Uranium-238	0.0075	0.020	0.080	0.081	0.089
Central Tendency Exposure					
Carbon-14	--	--	--		
Cesium-137	0.086	0.23	0.28		
Cobalt-60	NA	NA	NA		
Europium-152	NA	NA	NA		
Europium-154	NA	NA	NA		
Nickel-63	--	--	--		
Plutonium-239/240	0.00034	0.00074	0.0025		
Strontium-90	0.00046	0.0012	0.35		
Technetium-99	--	--	--		
Uranium-233/234	0.00023	0.00049	0.027		
Uranium-235	NA	NA	NA		
Uranium-238	0.0063	0.017	0.045		

NOTE: Only "Reasonable Maximum Exposure" CTUIR Resident and Yakama Resident results were calculated, based on parameter values published in Harris, S., and B. L. Harper, 2004, *Exposure Scenario for the CTUIR Traditional Subsistence Lifeways*, Department of Natural Resources, Pendleton, Oregon and Ridolfi, 2007, *Yakama Nation Exposure Scenario for Hanford Site Risk Assessment, Richland, Washington,* Prepared for the Yakama Nation ERWM Program by Ridolfi Inc., Seattle, Washington.

-- = not applicable. Not analyzed in Reference Area soil samples.
COPC = contaminant of potential concern
CTUIR = Confederated Tribes of the Umatilla Indian Reservation
NA = not available. Not detected in any sample.

Table 5-50. Hazard Quotient Related to Reference Area Concentrations of Shallow Zone Soil Contaminants of Potential Concern. (2 Pages)

COPC	Industrial/ Commercial	Monument Worker	Subsistence Farmer (Child)	CTUIR Resident (Child)	Yakama Resident (Child)
Reasonable Maximum Exposure					
Arsenic	0.0057	0.012	2.7	32	18
Barium	0.00036	0.00086	0.020	0.11	0.076
Beryllium	0.00016	0.00034	0.0075	0.053	0.036
Boron	0.0000048	0.000010	0.022	0.11	0.085
Cadmium	0.00010	0.00020	0.18	1.9	1.1
Chromium	0.0000038	0.0000074	0.00064	0.00057	0.0019
Copper	0.00021	0.00042	0.41	2.2	1.9
Fluoride	0.0000054	0.000011	0.0033	0.0093	0.011
Hexavalent chromium	0.000055	0.00011	0.0090	0.0081	0.027
Lead	NA[a]	NA[a]	NA[a]	NA[a]	NA[a]
Mercury	0.000036	0.000070	0.28	1.4	1.7
Nickel	0.00032	0.00062	0.43	1.2	1.3
Nitrogen in nitrite and nitrate	0.00000024	0.00000047	0.0000056	0.000012	0.000012
Silver	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Uranium (inorganic)	0.00075	0.0015	0.091	0.18	0.16

Table 5-50. Hazard Quotient Related to Reference Area Concentrations of Shallow Zone Soil Contaminants of Potential Concern. (2 Pages)

COPC	Industrial/ Commercial	Monument Worker	Subsistence Farmer (Child)	CTUIR Resident (Child)	Yakama Resident (Child)
Zinc	0.000082	0.00016	0.61	2.8	3.0
Aroclor-1248	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Aroclor-1254	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Aroclor-1260	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Dichlorodiphenyltri-chloroethane	NA[b]	NA[b]	NA[b]	NA[b]	NA[b]
Ethylene glycol	--	--	--	--	--
Central Tendency Exposure					
Arsenic	0.0024	0.0053	0.92		
Barium	0.00020	0.00052	0.0081		
Beryllium	0.000079	0.00017	0.0030		
Boron	0.0000020	0.0000040	0.0086		
Cadmium	0.000035	0.000079	0.056		
Chromium	0.0000016	0.0000032	0.00029		
Copper	0.000095	0.00019	0.17		
Fluoride	0.0000021	0.0000041	0.0013		
Hexavalent chromium	0.000026	0.000052	0.0043		
Lead	NA[a]	NA[a]	NA[a]		
Mercury	0.000018	0.000035	0.14		
Nickel	0.00014	0.00027	0.19		
Nitrogen in nitrite and nitrate	0.00000011	0.00000021	0.0000026		
Silver	NA[b]	NA[b]	NA[b]		
Uranium (inorganic)	0.00031	0.00061	0.039		
Zinc	0.000038	0.000075	0.28		
Aroclor-1248	NA[b]	NA[b]	NA[b]		
Aroclor-1254	NA[b]	NA[b]	NA[b]		
Aroclor-1260	NA[b]	NA[b]	NA[b]		
Dichlorodiphenyltri-chloroethane	NA[b]	NA[b]	NA[b]		
Ethylene glycol	--	--	--		

NOTE: Only "Reasonable Maximum Exposure" CTUIR Resident and Yakama Resident results were calculated, based on parameter values published in Harris, S., and B. L. Harper, 2004, *Exposure Scenario for the CTUIR Traditional Subsistence Lifeways*, Department of Natural Resources, Pendleton, Oregon and Ridolfi, 2007, *Yakama Nation Exposure Scenario for Hanford Site Risk Assessment, Richland, Washington,* Prepared for the Yakama Nation ERWM Program by Ridolfi Inc., Seattle, Washington.

[a] Lead soil concentrations are evaluated relative to U.S. Environmental Protection Agency benchmarks based on neurobehavioral effects in Sections 5.3 through 5.8.

[b] Not detected in any sample.

-- = not applicable. Not analyzed in Reference Area soil samples.
COPC = contaminant of potential concern
CTUIR = Confederated Tribes of the Umatilla Indian Reservation
NA = not available

Table 5-51. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-B/C Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
116-B-11	2E-04	7E-06	2E-06	1E-05	9E-07	3E-07
116-B-14	2E-04	8E-06	2E-06	2E-05	1E-06	3E-07
116-B-6A	1E-04	2E-05	4E-06	1E-05	2E-06	5E-07
132-B-6	1E-04	8E-06	2E-06	2E-05	8E-07	2E-07
116-C-5	9E-05	6E-06	2E-06	2E-05	1E-06	3E-07
116-C-1	8E-05	6E-06	1E-06	5E-06	5E-07	2E-07
100-B-8:2	4E-05	2E-06	8E-07	1E-05	4E-07	2E-07
116-B-1	4E-05	2E-06	8E-07	7E-06	3E-07	2E-07
116-C-2A	4E-05	3E-06	9E-07	7E-06	4E-07	1E-07
116-C-6	4E-05	6E-06	2E-06	6E-06	1E-06	3E-07
100-B-8:1	3E-05	2E-06	6E-07	3E-06	3E-07	1E-07
118-B-10	3E-05	2E-07	5E-08	9E-06	5E-08	1E-08
116-B-2	2E-05	4E-06	1E-06	2E-06	6E-07	2E-07
118-B-3	2E-05	6E-07	8E-08	5E-06	1E-07	2E-08
118-B-4	2E-05	1E-06	2E-07	3E-06	2E-07	3E-08
132-C-2	2E-05	1E-06	1E-06	5E-06	3E-07	2E-07
116-B-13	1E-05	1E-06	8E-07	2E-06	2E-07	2E-07
116-B-10	8E-06	8E-07	7E-07	2E-06	2E-07	1E-07
116-B-7	6E-06	2E-06	1E-06	1E-06	4E-07	2E-07
128-B-2	5E-06	2E-06	9E-07	1E-06	4E-07	2E-07
100-C-3	3E-06	1E-06	8E-07	7E-07	3E-07	2E-07
118-C-2	2E-06	4E-07	9E-08	4E-07	8E-08	2E-08
116-B-12	1E-06	6E-07	5E-07	2E-07	1E-07	1E-07
116-B-3	1E-06	6E-07	5E-07	2E-07	1E-07	1E-07
116-B-4	1E-06	8E-07	7E-07	2E-07	1E-07	1E-07
116-B-6B	1E-06	7E-07	6E-07	2E-07	1E-07	1E-07
100-B-5	9E-07	8E-07	8E-07	1E-07	1E-07	1E-07
116-B-15	8E-07	8E-07	7E-07	1E-07	1E-07	1E-07
1607-B10	8E-07	2E-07	6E-08	2E-07	5E-08	1E-08
118-B-5	6E-07	1E-07	3E-08	2E-07	3E-08	7E-09
118-C-4	6E-07	6E-07	6E-07	1E-07	1E-07	1E-07
116-B-9	5E-07	5E-07	5E-07	1E-07	1E-07	1E-07
128-C-1	3E-07	3E-07	3E-07	1E-08	1E-08	1E-08
1607-B8	2E-07	2E-07	2E-07	1E-08	1E-08	1E-08
100-B-11	4E-08	1E-08	6E-09	1E-08	3E-09	1E-09
600-232	2E-08	2E-08	2E-08	2E-09	2E-09	2E-09
100-B-14:5	5E-09	5E-09	5E-09	1E-09	1E-09	1E-09
100-B-14:6	5E-09	5E-09	5E-09	1E-09	1E-09	1E-09

Table 5-51. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-B/C Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
100-B-14:7	5E-09	5E-09	5E-09	1E-09	1E-09	1E-09
100-B-16	5E-09	5E-09	5E-09	1E-09	1E-09	1E-09
118-B-9	5E-09	5E-09	5E-09	1E-09	1E-09	1E-09
1607-B7	5E-09	5E-09	5E-09	1E-09	1E-09	1E-09
1607-B9	5E-09	5E-09	5E-09	1E-09	1E-09	1E-09
600-233	5E-09	5E-09	5E-09	1E-09	1E-09	1E-09
1607-B11	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-52. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-B/C Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
116-B-11	9.2	0.38	0.091	2.8	0.17	0.062
116-B-14	8.4	0.41	0.098	3.3	0.2	0.067
116-B-6A	5.8	1.2	0.23	2	0.42	0.094
132-B-6	5.3	0.42	0.093	4	0.16	0.039
116-C-5	5	0.32	0.081	3.4	0.21	0.057
116-C-1	4	0.31	0.075	0.9	0.093	0.038
100-B-8:2	2.2	0.11	0.04	1.9	0.076	0.031
116-B-1	2.1	0.099	0.041	1.5	0.063	0.033
116-C-2A	2.1	0.15	0.046	1.4	0.072	0.028
116-C-6	1.9	0.35	0.092	1.3	0.22	0.059
118-B-10	1.7	0.0097	0.0018	1.7	0.0095	0.0017
100-B-8:1	1.6	0.095	0.033	0.66	0.057	0.026
118-B-3	1.1	0.03	0.004	1.1	0.029	0.0037
132-C-2	1	0.073	0.058	1	0.058	0.044
116-B-2	0.98	0.22	0.061	0.48	0.11	0.038
118-B-4	0.8	0.063	0.009	0.57	0.042	0.0058
116-B-13	0.66	0.066	0.043	0.39	0.048	0.034
116-B-10	0.44	0.043	0.035	0.43	0.031	0.023
116-B-7	0.32	0.1	0.057	0.29	0.08	0.036
128-B-2	0.28	0.086	0.046	0.27	0.076	0.036
100-C-3	0.15	0.06	0.039	0.14	0.051	0.031

Table 5-52. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-B/C Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
118-C-2	0.1	0.021	0.0039	0.077	0.015	0.0028
116-B-4	0.077	0.045	0.037	0.048	0.027	0.022
116-B-12	0.057	0.034	0.029	0.05	0.028	0.022
116-B-6B	0.057	0.036	0.031	0.05	0.03	0.025
116-B-3	0.055	0.033	0.027	0.046	0.027	0.022
100-B-5	0.047	0.044	0.043	0.025	0.024	0.023
116-B-15	0.042	0.04	0.038	0.028	0.027	0.026
1607-B10	0.042	0.0084	0.0015	0.042	0.0084	0.0015
118-C-4	0.034	0.032	0.031	0.024	0.023	0.022
118-B-5	0.032	0.0064	0.0012	0.032	0.0064	0.0012
116-B-9	0.028	0.026	0.025	0.021	0.02	0.02
100-B-11	0.0018	0.00039	0.00012	0.0016	0.00033	0.000084
100-B-14:5	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-B-14:6	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-B-14:7	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-B-16	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
118-B-9	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
1607-B11	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
1607-B7	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
1607-B8	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
1607-B9	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-232	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-233	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
128-C-1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-53. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-B/C Area Remediated Waste Sites for the Industrial/Commercial Scenario. (3 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
128-C-1	0.02	0.0029
1607-B8	0.013	0.0027
128-B-2	0.0051	0.0017
116-B-10	0.004	0.0011
116-B-11	0.0038	0.0017

Table 5-53. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-B/C Area Remediated Waste Sites for the Industrial/Commercial Scenario. (3 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
116-B-14	0.0038	0.0018
100-B-14:6	0.003	0.0016
116-B-7	0.0027	0.0009
1607-B10	0.0027	0.0012
116-C-5	0.0026	0.0012
116-B-13	0.0024	0.0011
132-B-6	0.0024	0.001
116-B-1	0.0023	0.0011
116-C-1	0.0021	0.00098
100-C-3	0.002	0.00083
116-B-9	0.0018	0.00079
132-C-2	0.0018	0.00086
100-B-5	0.0017	0.00077
116-B-15	0.0017	0.00078
116-B-4	0.0017	0.00071
116-B-6B	0.0017	0.0008
100-B-8:1	0.0016	0.00077
100-B-8:2	0.0016	0.00077
118-C-4	0.0016	0.00071
116-B-12	0.0015	0.00068
116-B-3	0.0015	0.00075
116-B-6A	0.0015	0.00072
116-C-2A	0.0014	0.0007
116-C-6	0.0014	0.00069
118-B-9	0.0014	0.00057
116-B-2	0.0013	0.0006
100-B-14:7	0.001	0.00056
600-232	0.00097	0.00047
100-B-14:5	0.00064	0.00033
100-B-11	0.00063	0.00033
600-233	0.00057	0.00033
1607-B9	0.00056	0.00031
118-B-10	0.00052	0.0003
118-B-3	0.0004	0.00021
100-B-16	0.00036	0.0002
1607-B7	0.00024	0.00016
1607-B11	0.00016	0.00013

Table 5-53. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-B/C Area Remediated Waste Sites for the Industrial/Commercial Scenario. (3 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
118-B-5	0.00011	0.0001
118-B-4	-- [a]	-- [a]
118-C-2	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-54. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-B/C Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	2E-05	2E-06	1E-06	4E-06	3E-07	1E-07
116-B-11	3E-04	1E-05	3E-06	2E-05	1E-06	5E-07
116-B-14	3E-04	1E-05	3E-06	3E-05	2E-06	6E-07
116-B-6A	2E-04	4E-05	8E-06	2E-05	3E-06	8E-07
116-C-5	2E-04	1E-05	3E-06	3E-05	2E-06	5E-07
132-B-6	2E-04	1E-05	3E-06	3E-05	1E-06	3E-07
116-C-1	1E-04	1E-05	2E-06	8E-06	8E-07	3E-07
100-B-8:2	7E-05	4E-06	1E-06	2E-05	6E-07	3E-07
116-B-1	7E-05	3E-06	1E-06	1E-05	5E-07	3E-07
116-C-2A	7E-05	5E-06	1E-06	1E-05	6E-07	2E-07
116-C-6	6E-05	1E-05	3E-06	1E-05	2E-06	5E-07
118-B-10	6E-05	3E-07	8E-08	1E-05	8E-08	2E-08
100-B-8:1	5E-05	3E-06	1E-06	5E-06	5E-07	2E-07
118-B-3	4E-05	1E-06	1E-07	9E-06	2E-07	3E-08
116-B-2	3E-05	7E-06	2E-06	4E-06	9E-07	3E-07
118-B-4	3E-05	2E-06	3E-07	5E-06	4E-07	5E-08
132-C-2	3E-05	2E-06	2E-06	9E-06	5E-07	4E-07
116-B-13	2E-05	2E-06	1E-06	3E-06	4E-07	3E-07
116-B-10	1E-05	1E-06	1E-06	4E-06	3E-07	2E-07
116-B-7	1E-05	3E-06	2E-06	2E-06	7E-07	3E-07
128-B-2	9E-06	3E-06	2E-06	2E-06	6E-07	3E-07
100-C-3	5E-06	2E-06	1E-06	1E-06	4E-07	3E-07
118-C-2	3E-06	7E-07	1E-07	6E-07	1E-07	3E-08
116-B-12	2E-06	1E-06	9E-07	4E-07	2E-07	2E-07
116-B-3	2E-06	1E-06	9E-07	4E-07	2E-07	2E-07
116-B-4	2E-06	1E-06	1E-06	4E-07	2E-07	2E-07
116-B-6B	2E-06	1E-06	1E-06	4E-07	2E-07	2E-07
100-B-5	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
116-B-15	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
118-B-5	1E-06	2E-07	4E-08	3E-07	5E-08	1E-08

Table 5-54. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-B/C Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
118-C-4	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
1607-B10	1E-06	3E-07	1E-07	4E-07	8E-08	2E-08
116-B-9	9E-07	9E-07	8E-07	2E-07	2E-07	2E-07
128-C-1	5E-07	5E-07	5E-07	2E-08	2E-08	2E-08
1607-B8	3E-07	3E-07	3E-07	2E-08	2E-08	2E-08
100-B-11	7E-08	2E-08	9E-09	2E-08	4E-09	2E-09
600-232	3E-08	3E-08	3E-08	4E-09	4E-09	4E-09
100-B-14:7	8E-09	7E-09	7E-09	1E-09	1E-09	1E-09
100-B-14:5	7E-09	7E-09	7E-09	1E-09	1E-09	1E-09
100-B-14:6	7E-09	7E-09	7E-09	1E-09	1E-09	1E-09
100-B-16	7E-09	7E-09	7E-09	1E-09	1E-09	1E-09
118-B-9	7E-09	7E-09	7E-09	1E-09	1E-09	1E-09
1607-B7	7E-09	7E-09	7E-09	1E-09	1E-09	1E-09
1607-B9	7E-09	7E-09	7E-09	1E-09	1E-09	1E-09
600-233	7E-09	7E-09	7E-09	1E-09	1E-09	1E-09
1607-B11	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-55. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-B/C Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	0.80	0.047	0.013	0.78	0.042	0.010
116-B-11	16	0.67	0.16	4.8	0.29	0.1
116-B-14	15	0.71	0.17	5.5	0.33	0.11
116-B-6A	10	2	0.4	3.4	0.7	0.16
132-B-6	9.2	0.74	0.16	6.6	0.27	0.065
116-C-5	8.8	0.56	0.14	5.8	0.35	0.095
116-C-1	7.1	0.54	0.13	1.5	0.16	0.063
100-B-8:2	3.9	0.19	0.069	3.3	0.13	0.052
116-B-1	3.7	0.17	0.071	2.4	0.11	0.054
116-C-2A	3.7	0.26	0.08	2.3	0.12	0.047
116-C-6	3.4	0.6	0.16	2.2	0.37	0.098
118-B-10	3	0.017	0.0036	2.9	0.016	0.003

Table 5-55. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-B/C Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
100-B-8:1	2.7	0.17	0.057	1.1	0.096	0.043
118-B-3	1.9	0.052	0.0074	1.8	0.049	0.0062
132-C-2	1.8	0.13	0.1	1.7	0.096	0.073
116-B-2	1.7	0.38	0.11	0.8	0.19	0.063
118-B-4	1.4	0.11	0.016	0.96	0.071	0.0098
116-B-13	1.1	0.11	0.074	0.66	0.08	0.057
116-B-10	0.78	0.075	0.061	0.72	0.051	0.038
116-B-7	0.55	0.18	0.098	0.49	0.13	0.06
128-B-2	0.49	0.15	0.079	0.45	0.13	0.06
100-C-3	0.27	0.1	0.068	0.24	0.085	0.051
118-C-2	0.18	0.037	0.0072	0.13	0.026	0.0047
116-B-4	0.13	0.077	0.064	0.08	0.046	0.037
116-B-12	0.099	0.059	0.05	0.083	0.046	0.037
116-B-6B	0.099	0.063	0.054	0.083	0.05	0.042
116-B-3	0.096	0.057	0.048	0.077	0.044	0.037
100-B-5	0.081	0.077	0.074	0.042	0.04	0.038
1607-B10	0.074	0.015	0.0032	0.07	0.014	0.0026
116-B-15	0.073	0.07	0.067	0.047	0.045	0.043
118-C-4	0.059	0.056	0.054	0.04	0.038	0.037
118-B-5	0.056	0.012	0.0025	0.054	0.011	0.0021
116-B-9	0.049	0.046	0.044	0.036	0.034	0.033
100-B-11	0.0035	0.0011	0.00068	0.0028	0.00067	0.00027
100-B-14:5	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-B-14:6	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-B-14:7	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-B-16	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
118-B-9	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
1607-B11	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
1607-B7	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
1607-B8	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
1607-B9	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
600-232	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
600-233	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
128-C-1	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-56. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-B/C Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
Broad-area component [b]	0.025	0.0079
128-C-1	0.046	0.014
1607-B8	0.035	0.014
128-B-2	0.02	0.011
116-B-10	0.017	0.0095
116-B-11	0.017	0.01
116-B-14	0.017	0.01
1607-B10	0.016	0.01
100-B-14:6	0.016	0.01
116-B-13	0.015	0.0095
116-B-7	0.015	0.0092
116-C-5	0.015	0.0095
132-B-6	0.015	0.0094
116-B-1	0.015	0.0094
100-C-3	0.014	0.0091
116-B-15	0.014	0.009
116-B-6B	0.014	0.009
116-B-9	0.014	0.009
116-C-1	0.014	0.0093
132-C-2	0.014	0.0091
100-B-5	0.014	0.009
100-B-8:1	0.014	0.009
116-B-4	0.014	0.0089
118-C-4	0.014	0.0089
100-B-14:7	0.013	0.0087
100-B-8:2	0.013	0.009
116-B-12	0.013	0.0088
116-B-2	0.013	0.0087
116-B-3	0.013	0.0089
116-B-6A	0.013	0.0089
116-C-2A	0.013	0.0089
116-C-6	0.013	0.0088
118-B-9	0.013	0.0087
600-232	0.013	0.0088
100-B-11	0.012	0.0083
100-B-14:5	0.012	0.0083
100-B-16	0.012	0.0081
118-B-10	0.012	0.0083
118-B-3	0.012	0.0082
1607-B9	0.012	0.0083
600-233	0.012	0.0083
1607-B7	0.012	0.0081
118-B-5	0.011	0.008

Table 5-56. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-B/C Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
1607-B11	0.011	0.008
118-B-4	-- [c]	-- [c]
118-C-2	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-57. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-B/C Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
116-B-6A	1E-03	2E-04	5E-05	8E-05	2E-05	4E-06
116-B-14	8E-04	8E-05	2E-05	8E-05	8E-06	3E-06
116-B-11	7E-04	5E-05	2E-05	6E-05	6E-06	3E-06
116-C-1	4E-04	5E-05	1E-05	2E-05	3E-06	2E-06
116-C-2A	4E-04	6E-05	1E-05	4E-05	3E-06	1E-06
116-C-5	4E-04	4E-05	1E-05	8E-05	7E-06	2E-06
132-B-6	4E-04	4E-05	1E-05	8E-05	4E-06	2E-06
100-B-8:2	2E-04	2E-05	8E-06	4E-05	3E-06	1E-06
116-B-1	2E-04	1E-05	8E-06	3E-05	2E-06	1E-06
116-C-6	2E-04	4E-05	1E-05	3E-05	6E-06	2E-06
100-B-8:1	1E-04	1E-05	6E-06	2E-05	2E-06	1E-06
116-B-13	1E-04	2E-05	1E-05	1E-05	2E-06	2E-06
116-B-2	1E-04	3E-05	9E-06	1E-05	3E-06	1E-06
118-B-10	1E-04	1E-05	8E-06	4E-05	1E-06	7E-07
132-C-2	9E-05	1E-05	8E-06	2E-05	2E-06	1E-06
118-B-3	8E-05	5E-06	1E-06	2E-05	8E-07	1E-07
116-B-7	6E-05	2E-05	1E-05	8E-06	3E-06	1E-06
118-B-4	6E-05	5E-06	8E-07	1E-05	9E-07	1E-07
116-B-10	4E-05	8E-06	7E-06	9E-06	1E-06	1E-06
118-C-2	4E-05	2E-05	1E-05	4E-06	2E-06	1E-06
100-B-11	3E-05	6E-06	1E-06	5E-06	9E-07	2E-07

Table 5-57. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-B/C Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
128-B-2	3E-05	1E-05	9E-06	7E-06	2E-06	2E-06
100-B-5	2E-05	9E-06	7E-06	2E-06	1E-06	1E-06
100-C-3	2E-05	1E-05	7E-06	4E-06	2E-06	1E-06
116-B-15	2E-05	1E-05	1E-05	2E-06	2E-06	1E-06
116-B-3	2E-05	9E-06	6E-06	2E-06	1E-06	1E-06
116-B-4	2E-05	8E-06	6E-06	2E-06	1E-06	9E-07
116-B-9	2E-05	8E-06	5E-06	9E-07	9E-07	8E-07
116-B-12	1E-05	7E-06	6E-06	2E-06	1E-06	1E-06
116-B-6B	1E-05	7E-06	6E-06	2E-06	1E-06	1E-06
128-C-1	1E-05	1E-05	1E-05	6E-07	6E-07	6E-07
1607-B8	8E-06	8E-06	8E-06	7E-07	7E-07	7E-07
118-C-4	7E-06	6E-06	6E-06	1E-06	1E-06	9E-07
1607-B10	5E-06	2E-06	1E-06	1E-06	4E-07	3E-07
118-B-5	3E-06	8E-07	2E-07	7E-07	2E-07	4E-08
600-232	5E-07	5E-07	5E-07	9E-08	9E-08	9E-08
100-B-14:5	2E-08	2E-08	2E-08	6E-09	6E-09	6E-09
100-B-14:6	2E-08	2E-08	2E-08	6E-09	6E-09	6E-09
100-B-14:7	2E-08	2E-08	2E-08	6E-09	6E-09	6E-09
100-B-16	2E-08	2E-08	2E-08	6E-09	6E-09	6E-09
118-B-9	2E-08	2E-08	2E-08	6E-09	6E-09	6E-09
1607-B7	2E-08	2E-08	2E-08	6E-09	6E-09	6E-09
1607-B9	2E-08	2E-08	2E-08	6E-09	6E-09	6E-09
600-233	2E-08	2E-08	2E-08	6E-09	6E-09	6E-09
1607-B11	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-58. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-B/C Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
116-B-6A	76	15	2.9	14	2.9	0.68
116-B-14	42	5.2	1.7	13	1.5	0.69
116-B-11	31	2.7	1.2	9.3	1	0.54
116-C-2A	24	4	0.97	5.9	0.67	0.26
116-C-1	20	2.8	0.93	3.6	0.64	0.34
116-C-5	20	2.5	0.94	12	1.1	0.46
132-B-6	18	2.1	0.77	12	0.72	0.31
116-C-6	12	2.6	0.84	5.4	1.1	0.37
100-B-8:2	11	1.4	0.55	6.7	0.56	0.27
116-B-1	7.3	0.86	0.55	4.5	0.4	0.29
116-B-2	7.3	1.7	0.58	2.4	0.62	0.26
116-B-13	6.8	1.6	0.82	2	0.52	0.37
100-B-8:1	6.1	0.83	0.44	2.4	0.39	0.24
118-B-10	6.1	0.53	0.3	5.3	0.17	0.088
132-C-2	4.6	0.79	0.56	3.3	0.37	0.29
118-B-3	4.2	0.31	0.06	3.3	0.14	0.021
116-B-7	3.8	1.3	0.78	1.4	0.48	0.28
100-B-11	2.5	0.48	0.08	1.2	0.22	0.037
118-B-4	2.5	0.23	0.034	1.7	0.13	0.019
116-B-10	2	0.55	0.46	1.4	0.24	0.21
116-B-3	1.6	0.67	0.47	0.33	0.25	0.23
118-C-2	1.6	0.8	0.43	0.58	0.25	0.12
116-B-9	1.5	0.56	0.36	0.19	0.18	0.17
100-B-5	1.4	0.67	0.52	0.49	0.28	0.23
100-C-3	1.4	0.69	0.52	0.62	0.31	0.24
128-B-2	1.4	0.69	0.52	1.1	0.43	0.29
116-B-4	1.1	0.57	0.46	0.3	0.22	0.2
116-B-15	0.98	0.71	0.59	0.35	0.3	0.27
116-B-6B	0.89	0.52	0.44	0.32	0.25	0.23
116-B-12	0.74	0.47	0.4	0.31	0.23	0.21
118-C-4	0.49	0.44	0.42	0.22	0.21	0.2
1607-B10	0.16	0.032	0.0057	0.14	0.027	0.005
118-B-5	0.13	0.032	0.009	0.11	0.022	0.0043
100-B-14:5	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-B-14:6	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-B-14:7	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-B-16	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

Table 5-58. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-B/C Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
118-B-9	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
1607-B11	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
1607-B7	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
1607-B8	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
1607-B9	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-232	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-233	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
128-C-1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-59. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-B/C Area Remediated Waste Sites for the Subsistence Farmer Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
100-B-14:6	19	9.4
116-B-10	16	3
118-B-9	6.9	2.2
116-B-9	5	1.6
1607-B10	5	1.6
128-C-1	5	1.3
132-B-6	3.2	0.71
100-B-14:7	3.1	1.4
118-B-10	2.9	1.4
1607-B8	2.1	0.61
1607-B9	2	0.91
116-B-11	1.8	0.62
128-B-2	1.8	0.79
100-B-11	1.6	0.66
100-B-14:5	1.6	0.57
116-C-2A	1.6	0.81
600-233	1	0.45
116-B-14	0.81	0.35
116-C-5	0.79	0.32
100-B-8:1	0.76	0.25

Table 5-59. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-B/C Area Remediated Waste Sites for the Subsistence Farmer Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
100-B-16	0.75	0.3
116-B-6B	0.69	0.33
116-C-1	0.61	0.3
116-B-1	0.52	0.24
116-B-13	0.52	0.25
100-C-3	0.5	0.18
118-B-3	0.46	0.14
116-B-3	0.42	0.2
116-B-6A	0.41	0.2
100-B-5	0.4	0.19
600-232	0.4	0.18
100-B-8:2	0.39	0.19
1607-B11	0.38	0.19
116-B-7	0.32	0.1
1607-B7	0.24	0.094
116-B-15	0.2	0.087
132-C-2	0.2	0.097
116-B-4	0.19	0.078
118-C-4	0.18	0.078
116-B-12	0.16	0.073
116-C-6	0.15	0.075
116-B-2	0.14	0.064
118-B-5	0.0007	0.00054
118-B-4	-- [b]	-- [b]
118-C-2	-- [b]	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] Hazard indices pertain to the child receptor.

[b] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-60. Total Cancer Risks for the 100-B/C Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
116-B-6A	7E-03	1E-03	3E-04
116-B-14	3E-03	4E-04	1E-04
116-B-11	2E-03	2E-04	7E-05
116-C-1	2E-03	2E-04	6E-05
116-C-2A	2E-03	4E-04	8E-05
116-C-5	1E-03	2E-04	6E-05
116-C-6	1E-03	2E-04	6E-05
132-B-6	1E-03	1E-04	4E-05
100-B-8:2	8E-04	1E-04	3E-05
116-B-13	6E-04	1E-04	5E-05
116-B-2	6E-04	1E-04	4E-05
116-B-1	5E-04	5E-05	3E-05
118-B-10	5E-04	6E-05	3E-05
100-B-8:1	4E-04	5E-05	2E-05
100-B-11	3E-04	5E-05	8E-06
116-B-7	3E-04	9E-05	4E-05
118-B-3	3E-04	3E-05	6E-06
132-C-2	3E-04	5E-05	3E-05
118-B-4	2E-04	2E-05	2E-06
118-C-2	2E-04	9E-05	5E-05
100-B-5	1E-04	4E-05	3E-05
100-C-3	1E-04	4E-05	2E-05
116-B-10	1E-04	3E-05	2E-05
116-B-3	1E-04	4E-05	2E-05
116-B-9	1E-04	4E-05	2E-05
128-B-2	9E-05	4E-05	3E-05
116-B-4	8E-05	3E-05	2E-05
116-B-15	7E-05	5E-05	3E-05
116-B-6B	6E-05	3E-05	2E-05
116-B-12	5E-05	2E-05	2E-05
128-C-1	4E-05	4E-05	4E-05
1607-B8	3E-05	3E-05	3E-05
118-C-4	2E-05	2E-05	2E-05
1607-B10	2E-05	6E-06	4E-06
118-B-5	1E-05	3E-06	9E-07
600-232	2E-06	2E-06	2E-06
100-B-14:5	6E-08	6E-08	6E-08
100-B-14:6	6E-08	6E-08	6E-08
100-B-14:7	6E-08	6E-08	6E-08

Table 5-60. Total Cancer Risks for the 100-B/C Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
100-B-16	6E-08	6E-08	6E-08
118-B-9	6E-08	6E-08	6E-08
1607-B7	6E-08	6E-08	6E-08
1607-B9	6E-08	6E-08	6E-08
600-233	6E-08	6E-08	6E-08
1607-B11	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-61. Total Radiation Dose (mrem/yr) for the 100-B/C Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
116-B-6A	160	30	5.5
116-B-14	68	9.8	2.5
116-C-2A	50	8.7	1.8
116-B-11	39	3.6	1.4
116-C-1	31	4.7	1.3
116-C-5	28	3.8	1.2
132-B-6	22	2.6	0.85
116-C-6	20	4.2	1.3
100-B-8:2	16	2.3	0.73
116-B-13	13	2.7	1
116-B-2	12	2.7	0.75
116-B-1	9.1	1.1	0.59
100-B-8:1	8.2	1.2	0.5
118-B-10	7.3	0.67	0.37
116-B-7	6.8	1.9	0.89
132-C-2	6.7	1.1	0.63
100-B-11	6.1	1.2	0.19
118-B-3	6.1	0.6	0.12
116-B-3	3.2	0.96	0.52
116-B-9	3.2	0.88	0.41
118-B-4	2.9	0.25	0.038
100-B-5	2.6	0.96	0.61
116-B-10	2.6	0.63	0.48
100-C-3	2.2	0.82	0.54
118-C-2	1.9	0.99	0.54

Table 5-61. Total Radiation Dose (mrem/yr) for the 100-B/C Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
116-B-4	1.8	0.84	0.62
128-B-2	1.5	0.71	0.53
116-B-6B	1.4	0.62	0.46
116-B-15	1.3	0.81	0.63
116-B-12	1.1	0.54	0.42
118-C-4	0.57	0.47	0.44
1607-B10	0.18	0.036	0.0065
118-B-5	0.15	0.037	0.011
100-B-14:5	-- [a]	-- [a]	-- [a]
100-B-14:6	-- [a]	-- [a]	-- [a]
100-B-14:7	-- [a]	-- [a]	-- [a]
100-B-16	-- [a]	-- [a]	-- [a]
118-B-9	-- [a]	-- [a]	-- [a]
1607-B11	-- [a]	-- [a]	-- [a]
1607-B7	-- [a]	-- [a]	-- [a]
1607-B8	-- [a]	-- [a]	-- [a]
1607-B9	-- [a]	-- [a]	-- [a]
600-232	-- [a]	-- [a]	-- [a]
600-233	-- [a]	-- [a]	-- [a]
128-C-1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-62. Hazard Indices for the 100-B/C Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. [a] (2 Pages)

Waste Site	Present Day
100-B-14:6	95
116-B-10	80
118-B-9	36
128-C-1	29
1607-B10	25
116-B-9	24
100-B-14:7	18
118-B-10	15
132-B-6	15
1607-B9	12
128-B-2	9.2

Table 5-62. Hazard Indices for the 100-B/C Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. [a] (2 Pages)

Waste Site	Present Day
100-B-11	9.1
1607-B8	8.9
100-B-14:5	8.7
116-B-11	7.6
116-C-2A	7.6
600-233	6.6
100-B-16	5.8
118-B-3	4.8
100-C-3	3.5
100-B-8:1	3.2
116-C-5	3
116-B-6B	2.8
116-B-14	2.7
1607-B7	2.6
600-232	2.4
116-C-1	2.3
116-B-13	1.8
1607-B11	1.8
116-B-1	1.7
116-B-3	1.6
116-B-6A	1.5
100-B-5	1.4
100-B-8:2	1.4
116-B-7	0.61
132-C-2	0.4
116-B-15	0.39
116-B-4	0.37
118-C-4	0.35
116-B-12	0.32
116-C-6	0.31
116-B-2	0.28
118-B-5	0.0007
118-B-4	-- [b]
118-C-2	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] Hazard indices pertain to the child receptor.
[b] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-63. Total Cancer Risks for the 100-B/C Area Remediated Waste Sites for the Yakama Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
116-B-6A	9E-03	2E-03	3E-04
116-B-14	4E-03	6E-04	1E-04
116-C-2A	3E-03	5E-04	1E-04
116-B-11	2E-03	2E-04	8E-05
116-C-1	2E-03	3E-04	7E-05
116-C-5	2E-03	2E-04	7E-05
116-C-6	1E-03	3E-04	6E-05
132-B-6	1E-03	2E-04	5E-05
100-B-8:2	9E-04	1E-04	4E-05
116-B-2	8E-04	2E-04	4E-05
116-B-13	7E-04	2E-04	5E-05
100-B-8:1	5E-04	6E-05	2E-05
116-B-1	5E-04	6E-05	3E-05
118-B-10	5E-04	8E-05	5E-05
116-B-7	4E-04	1E-04	5E-05
132-C-2	4E-04	6E-05	3E-05
100-B-11	3E-04	7E-05	1E-05
118-B-3	3E-04	4E-05	8E-06
116-B-3	2E-04	5E-05	3E-05
116-B-9	2E-04	5E-05	2E-05
118-B-4	2E-04	2E-05	3E-06
118-C-2	2E-04	1E-04	7E-05
100-B-5	1E-04	5E-05	3E-05
100-C-3	1E-04	4E-05	3E-05
116-B-10	1E-04	3E-05	2E-05
116-B-15	1E-04	6E-05	4E-05
116-B-4	1E-04	4E-05	2E-05
128-B-2	1E-04	5E-05	4E-05
116-B-6B	8E-05	3E-05	2E-05
128-C-1	7E-05	7E-05	7E-05
116-B-12	6E-05	3E-05	2E-05
1607-B8	5E-05	5E-05	5E-05
118-C-4	3E-05	2E-05	2E-05
1607-B10	2E-05	1E-05	8E-06
118-B-5	1E-05	3E-06	1E-06
600-232	3E-06	3E-06	3E-06
100-B-14:5	6E-08	6E-08	6E-08
100-B-14:6	6E-08	6E-08	6E-08
100-B-14:7	6E-08	6E-08	6E-08
100-B-16	6E-08	6E-08	6E-08

Table 5-63. Total Cancer Risks for the 100-B/C Area Remediated Waste Sites for the Yakama Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
118-B-9	6E-08	6E-08	6E-08
1607-B7	6E-08	6E-08	6E-08
1607-B9	6E-08	6E-08	6E-08
600-233	6E-08	6E-08	6E-08
1607-B11	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-64. Total Radiation Dose (mrem/yr) for the 100-B/C Area Remediated Waste Sites for the Yakama Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
116-B-6A	190	37	6.7
116-B-14	78	12	3
116-C-2A	60	11	2.2
116-B-11	41	4.2	1.6
116-C-1	35	5.7	1.5
116-C-5	32	4.5	1.4
116-C-6	24	5	1.4
132-B-6	24	3	0.97
100-B-8:2	19	2.8	0.85
116-B-13	16	3.3	1.2
116-B-2	15	3.2	0.88
116-B-1	9.7	1.2	0.66
100-B-8:1	9	1.3	0.56
116-B-7	8.3	2.2	1
118-B-10	8	0.92	0.52
100-B-11	7.7	1.4	0.24
132-C-2	7.5	1.3	0.69
118-B-3	6.8	0.74	0.15
116-B-9	4	1	0.47
116-B-3	3.9	1.1	0.59
100-B-5	3.2	1.1	0.67
118-B-4	3.1	0.29	0.045
116-B-10	2.9	0.71	0.53
100-C-3	2.6	0.95	0.61
118-C-2	2.6	1.4	0.75
116-B-4	2.1	0.91	0.65
128-B-2	1.8	0.8	0.59

Table 5-64. Total Radiation Dose (mrem/yr) for the 100-B/C Area Remediated Waste Sites for the Yakama Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
116-B-6B	1.7	0.71	0.51
116-B-15	1.6	0.97	0.74
116-B-12	1.2	0.61	0.47
118-C-4	0.64	0.52	0.48
1607-B10	0.21	0.042	0.0077
118-B-5	0.18	0.046	0.014
100-B-14:5	-- [a]	-- [a]	-- [a]
100-B-14:6	-- [a]	-- [a]	-- [a]
100-B-14:7	-- [a]	-- [a]	-- [a]
100-B-16	-- [a]	-- [a]	-- [a]
118-B-9	-- [a]	-- [a]	-- [a]
1607-B11	-- [a]	-- [a]	-- [a]
1607-B7	-- [a]	-- [a]	-- [a]
1607-B8	-- [a]	-- [a]	-- [a]
1607-B9	-- [a]	-- [a]	-- [a]
600-232	-- [a]	-- [a]	-- [a]
600-233	-- [a]	-- [a]	-- [a]
128-C-1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-65. Hazard Indices for the 100-B/C Area Remediated Waste Sites for the Yakama Scenario. [a] (2 Pages)

Waste Site	Present Day
100-B-14:6	120
116-B-10	100
118-B-9	38
116-B-9	31
1607-B10	31
128-C-1	25
132-B-6	19
118-B-10	18
100-B-14:7	17
1607-B9	12
1607-B8	11
116-C-2A	9.7
116-B-11	9.5
128-B-2	8.7

Table 5-65. Hazard Indices for the 100-B/C Area Remediated Waste Sites for the Yakama Scenario. [a] (2 Pages)

Waste Site	Present Day
100-B-11	7.8
100-B-14:5	7.8
600-233	5.2
100-B-16	4.7
100-B-8:1	4
116-C-5	3.7
116-B-6B	3.5
116-B-14	3.1
116-C-1	2.8
118-B-3	2.8
1607-B11	2.4
600-232	2.3
100-C-3	2.1
116-B-1	2.1
116-B-13	2
116-B-3	1.9
116-B-6A	1.8
100-B-5	1.7
100-B-8:2	1.7
1607-B7	1.5
116-B-7	0.58
132-C-2	0.35
116-B-15	0.34
116-B-4	0.33
118-C-4	0.31
116-B-12	0.28
116-C-6	0.27
116-B-2	0.25
118-B-5	0.0012
118-B-4	-- [b]
118-C-2	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] Hazard indices pertain to the child receptor.
[b] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-66. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-K Area Remediated Waste Sites for the Industrial/Commercial Scenario.

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
100-K-56:1	1E-04	5E-06	9E-07	1E-05	5E-07	1E-07
100-K-55:1	7E-05	3E-06	8E-07	1E-05	4E-07	1E-07
116-KW-3	7E-05	2E-06	6E-07	1E-05	4E-07	1E-07
116-K-2	5E-05	6E-06	1E-06	7E-06	5E-07	2E-07
116-KE-4	4E-05	2E-06	6E-07	8E-06	3E-07	1E-07
116-K-1	3E-05	4E-06	7E-07	3E-06	2E-07	4E-08
116-KE-5	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
100-K-31	8E-07	8E-07	8E-07	8E-08	8E-08	8E-08
100-K-33	8E-07	8E-07	8E-07	1E-07	1E-07	1E-07
100-K-30	7E-07	7E-07	7E-07	8E-08	8E-08	8E-08
100-K-32	7E-07	7E-07	7E-07	7E-08	7E-08	7E-08
116-KW-4	7E-07	7E-07	7E-07	9E-08	9E-08	9E-08
100-K-29	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-67. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-K Area Remediated Waste Sites for the Industrial/Commercial Scenario.

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
100-K-56:1	6.1	0.28	0.048	2.9	0.11	0.026
100-K-55:1	3.9	0.16	0.043	2.5	0.074	0.027
116-KW-3	3.4	0.12	0.031	2.4	0.083	0.023
116-K-2	2.7	0.3	0.067	1.4	0.11	0.033
116-KE-4	2.2	0.11	0.03	1.7	0.062	0.022
116-K-1	1.7	0.21	0.036	0.59	0.05	0.0079
100-K-29	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-K-30	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-K-31	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-K-32	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-K-33	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
116-KE-5	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
116-KW-4	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-68. Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-K Area Remediated Waste Sites for the Industrial/Commercial Scenario.

Waste Site	RME Hazard Indices	CTE Hazard Indices
100-K-30	0.034	0.012
100-K-31	0.014	0.0037
100-K-33	0.0096	0.0048
100-K-32	0.0088	0.0036
116-KE-5	0.007	0.0034
116-KW-4	0.0047	0.0023
100-K-55:1	0.002	0.00089
116-KW-3	0.0018	0.0008
116-K-2	0.0017	0.0008
116-KE-4	0.0016	0.00075
100-K-56:1	0.0014	0.00071
116-K-1	0.00016	0.00012
100-K-29	0.00012	0.0001

CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-69. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-K Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	2E-05	2E-06	1E-06	4E-06	3E-07	1E-07
100-K-56:1	2E-04	9E-06	2E-06	2E-05	9E-07	2E-07
100-K-55:1	1E-04	5E-06	1E-06	2E-05	6E-07	2E-07
116-KW-3	1E-04	4E-06	1E-06	2E-05	7E-07	2E-07
116-K-2	9E-05	1E-05	2E-06	1E-05	9E-07	3E-07
116-KE-4	7E-05	4E-06	1E-06	1E-05	5E-07	2E-07
116-K-1	5E-05	7E-06	1E-06	5E-06	4E-07	7E-08
116-KE-5	2E-06	2E-06	2E-06	2E-07	2E-07	2E-07
100-K-30	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
100-K-31	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
100-K-32	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
100-K-33	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
116-KW-4	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07

Table 5-69. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-K Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
100-K-29	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-70. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-K Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a]

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	0.80	0.047	0.013	0.78	0.042	0.010
100-K-56:1	11	0.5	0.084	4.8	0.18	0.043
100-K-55:1	6.8	0.28	0.075	4.1	0.12	0.046
116-KW-3	6	0.21	0.053	4	0.14	0.038
116-K-2	4.8	0.52	0.12	2.3	0.18	0.055
116-KE-4	3.9	0.19	0.052	2.8	0.1	0.037
116-K-1	2.9	0.37	0.063	0.98	0.084	0.014
100-K-29	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-K-30	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-K-31	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-K-32	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-K-33	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
116-KE-5	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
116-KW-4	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-71. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-K Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a]

Waste Site	RME Hazard Indices	CTE Hazard Indices
Broad-area component [b]	0.025	0.0079
100-K-30	0.052	0.02
100-K-31	0.022	0.0074
100-K-33	0.016	0.009
100-K-32	0.015	0.0072
116-KE-5	0.013	0.0072
116-KW-4	0.0091	0.0054
100-K-55:1	0.0047	0.0029
116-KW-3	0.0044	0.0028
116-K-2	0.0042	0.0028
116-KE-4	0.0041	0.0027
100-K-56:1	0.0039	0.0027
116-K-1	0.002	0.0018
100-K-29	0.0019	0.0018

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-72. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-K Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
116-KE-5	6E-04	6E-04	6E-04	7E-05	7E-05	7E-05
100-K-33	5E-04	5E-04	5E-04	5E-05	5E-05	5E-05
100-K-56:1	5E-04	4E-05	9E-06	7E-05	4E-06	1E-06
100-K-30	4E-04	4E-04	4E-04	4E-05	4E-05	4E-05
100-K-31	4E-04	4E-04	4E-04	4E-05	4E-05	4E-05
100-K-32	4E-04	4E-04	4E-04	3E-05	3E-05	3E-05
116-K-1	4E-04	7E-05	1E-05	3E-05	5E-06	8E-07
116-KW-4	4E-04	4E-04	4E-04	5E-05	5E-05	5E-05
100-K-55:1	3E-04	3E-05	9E-06	5E-05	3E-06	1E-06
116-K-2	3E-04	4E-05	1E-05	3E-05	4E-06	2E-06
116-KW-3	3E-04	2E-05	7E-06	5E-05	3E-06	1E-06
116-KE-4	2E-04	2E-05	8E-06	4E-05	3E-06	1E-06

Table 5-72. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-K Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
100-K-29	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-73. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-K Area Remediated Waste Sites for the Subsistence Farmer Scenario.

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
116-K-1	29	5.1	0.86	7	1.2	0.19
100-K-56:1	24	2.2	0.57	10	0.81	0.25
100-K-55:1	16	1.7	0.65	8.3	0.6	0.29
116-K-2	13	2.1	0.73	5	0.69	0.31
116-KW-3	12	1	0.49	7.5	0.5	0.23
116-KE-4	10	1.3	0.54	5.8	0.52	0.25
100-K-29	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-K-30	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-K-31	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-K-32	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-K-33	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
116-KE-5	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
116-KW-4	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-74. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-K Area Remediated Waste Sites for the Subsistence Farmer Scenario. [a]

Waste Site	RME Hazard Indices	CTE Hazard Indices
100-K-30	220	77
100-K-31	68	13
100-K-33	35	17
100-K-32	32	15
116-KE-5	7.5	3
116-KW-4	2.2	0.86
100-K-55:1	0.23	0.1
116-KW-3	0.2	0.09
116-K-2	0.19	0.09
116-KE-4	0.18	0.085
100-K-56:1	0.17	0.081
116-K-1	0.0084	0.0046
100-K-29	0.0018	0.00086

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] Hazard indices pertain to the child receptor.
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-75. Total Cancer Risks for the 100-K Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario.

Waste Site	Present Day	2075	2150
116-KE-5	9E-03	9E-03	9E-03
100-K-30	7E-03	7E-03	7E-03
100-K-31	7E-03	7E-03	7E-03
100-K-32	7E-03	7E-03	7E-03
100-K-33	7E-03	7E-03	7E-03
116-KW-4	7E-03	7E-03	7E-03
116-K-1	3E-03	5E-04	9E-05
100-K-56:1	2E-03	2E-04	4E-05
100-K-55:1	1E-03	1E-04	4E-05
116-K-2	1E-03	2E-04	5E-05
116-KE-4	8E-04	1E-04	3E-05
116-KW-3	8E-04	7E-05	2E-05
100-K-29	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-76. Total Radiation Dose (mrem/yr) for the 100-K Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario.

Waste Site	Present Day	2075	2150
116-K-1	62	11	1.9
100-K-56:1	34	3.7	0.81
100-K-55:1	23	2.7	0.82
116-K-2	18	3.1	0.9
116-KW-3	16	1.5	0.56
116-KE-4	15	2.1	0.68
100-K-29	-- [a]	-- [a]	-- [a]
100-K-30	-- [a]	-- [a]	-- [a]
100-K-31	-- [a]	-- [a]	-- [a]
100-K-32	-- [a]	-- [a]	-- [a]
100-K-33	-- [a]	-- [a]	-- [a]
116-KE-5	-- [a]	-- [a]	-- [a]
116-KW-4	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-77. Hazard Indices for the 100-K Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. [a]

Waste Site	Present Day
100-K-30	1100
100-K-31	350
100-K-33	190
100-K-32	180
116-KE-5	85
116-KW-4	26
100-K-55:1	0.46
116-KW-3	0.39
116-K-2	0.37
116-KE-4	0.34
100-K-56:1	0.31
116-K-1	0.0076
100-K-29	0.0017

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] Hazard indices pertain to the child receptor.

Table 5-78. Total Cancer Risks for the 100-K Area Remediated Waste Sites for the Yakama Scenario.

Waste Site	Present Day	2075	2150
116-KE-5	9E-03	9E-03	9E-03
100-K-31	7E-03	7E-03	7E-03
100-K-33	7E-03	7E-03	7E-03
100-K-30	6E-03	6E-03	6E-03
100-K-32	6E-03	6E-03	6E-03
116-KW-4	6E-03	6E-03	6E-03
116-K-1	4E-03	7E-04	1E-04
100-K-56:1	2E-03	2E-04	5E-05
100-K-55:1	1E-03	2E-04	4E-05
116-K-2	1E-03	2E-04	6E-05
116-KE-4	9E-04	1E-04	4E-05
116-KW-3	9E-04	8E-05	3E-05
100-K-29	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-79. Total Radiation Dose (mrem/yr) for the 100-K Area Remediated Waste Sites for the Yakama Scenario.

Waste Site	Present Day	2075	2150
116-K-1	77	14	2.4
100-K-56:1	38	4.4	0.96
100-K-55:1	26	3.3	0.95
116-K-2	21	3.7	1.1
116-KE-4	17	2.5	0.81
116-KW-3	17	1.8	0.64
100-K-29	-- [a]	-- [a]	-- [a]
100-K-30	-- [a]	-- [a]	-- [a]
100-K-31	-- [a]	-- [a]	-- [a]
100-K-32	-- [a]	-- [a]	-- [a]
100-K-33	-- [a]	-- [a]	-- [a]
116-KE-5	-- [a]	-- [a]	-- [a]
116-KW-4	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-80. Hazard Indices for the 100-K Area Remediated Waste Sites for the Yakama Scenario. [a]

Waste Site	Present Day
100-K-30	1400
100-K-31	430
100-K-33	220
100-K-32	200
116-KE-5	51
116-KW-4	14
100-K-55:1	0.4
116-KW-3	0.37
116-K-2	0.34
100-K-56:1	0.33
116-KE-4	0.33
116-K-1	0.024
100-K-29	0.0046

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] Hazard indices pertain to the child receptor.

Table 5-81. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-N Area Remediated Waste Sites for the Industrial/Commercial Scenario.

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
116-N-3	1E-05	6E-09	5E-09	2E-06	1E-09	1E-09
120-N-1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-82. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for 100-N Area Remediated Waste Sites for the Industrial/Commercial Scenario.

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
116-N-3	0.56	0.00012	0.000062	0.39	0.000075	0.000035
120-N-1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-83. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for 100-N Area Remediated Waste Sites for the Industrial/Commercial Scenario.

Waste Site	RME Hazard Indices	CTE Hazard Indices
120-N-1	0.00018	0.00013
116-N-3	0.00011	0.000099

CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-84. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for 100-N Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a]

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	2E-05	2E-06	1E-06	4E-06	3E-07	1E-07
116-N-3	2E-05	2E-08	1E-08	3E-06	3E-09	3E-09
120-N-1	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.
[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.
[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.
[c] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-85. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for 100-N Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a]

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	0.80	0.047	0.013	0.78	0.042	0.010
116-N-3	0.98	0.00052	0.00042	0.65	0.00046	0.00039
120-N-1	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.
[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.
[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.
[c] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-86. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for 100-N Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a]

Waste Site	RME Hazard Indices	CTE Hazard Indices
Broad-area component [b]	0.025	0.0079
120-N-1	0.002	0.0018
116-N-3	0.0019	0.0018

NOTE: Tabulated risks do not incorporate exposure to groundwater.
[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.
[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-87. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for 100-N Area Remediated Waste Sites for the Subsistence Farmer Scenario.

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
116-N-3	4E-05	2E-08	2E-08	8E-06	7E-09	6E-09
120-N-1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-88. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for 100-N Area Remediated Waste Sites for the Subsistence Farmer Scenario.

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
116-N-3	1.7	0.00034	0.00016	1.1	0.00026	0.00014
120-N-1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-89. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for 100-N Area Remediated Waste Sites for the Subsistence Farmer Scenario. [a]

Waste Site	RME Hazard Indices	CTE Hazard Indices
120-N-1	0.5	0.25
116-N-3	0.00047	0.00042

[a] Hazard indices pertain to the child receptor.
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-90. Total Cancer Risks for 100-N Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario.

Waste Site	Present Day	2075	2150
116-N-3	1E-04	7E-08	6E-08
120-N-1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-91. Total Radiation Dose (mrem/yr) for 100-N Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario.

Waste Site	Present Day	2075	2150
116-N-3	2	0.00052	0.0003
120-N-1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-92. Hazard Indices for 100-N Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. [a]

Waste Site	Present Day
120-N-1	2.5
116-N-3	0.0005

[a] Hazard indices pertain to the child receptor.

Table 5-93. Total Cancer Risks for 100-N Area Remediated Waste Sites for the Yakama Scenario.

Waste Site	Present Day	2075	2150
116-N-3	1E-04	7E-08	6E-08
120-N-1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-94. Total Radiation Dose (mrem/yr) for 100-N Area Remediated Waste Sites for the Yakama Scenario.

Waste Site	Present Day	2075	2150
116-N-3	2.1	0.00055	0.00033
120-N-1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-95. Hazard Indices for 100-N Area Remediated Waste Sites for the Yakama Scenario. [a]

Waste Site	Present Day
120-N-1	3.1
116-N-3	0.0005

[a] Hazard indices pertain to the child receptor.

Table 5-96. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for 100-D/100-H Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
116-DR-9	2E-04	3E-05	5E-06	9E-06	1E-06	2E-07
100-D-48:3	7E-05	1E-05	3E-06	6E-06	1E-06	3E-07
100-D-49:4	6E-05	3E-06	7E-07	1E-05	6E-07	2E-07
100-D-48:2	5E-05	6E-06	1E-06	5E-06	5E-07	2E-07
100-D-20	4E-05	5E-06	1E-06	4E-06	5E-07	2E-07
116-H-1	4E-05	4E-06	2E-06	5E-06	5E-07	2E-07
118-DR-2:2	4E-05	6E-06	2E-06	7E-06	7E-07	3E-07
100-D-48:4	3E-05	4E-06	1E-06	3E-06	3E-07	1E-07

Table 5-96. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for 100-D/100-H Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
116-D-1A	3E-05	4E-06	1E-06	4E-06	5E-07	2E-07
116-D-7	3E-05	2E-06	6E-07	3E-06	2E-07	1E-07
100-D-48:1	2E-05	2E-06	8E-07	2E-06	2E-07	1E-07
100-H-21	2E-05	7E-06	5E-06	3E-06	8E-07	5E-07
116-DR-1&2	2E-05	3E-06	8E-07	3E-06	3E-07	1E-07
116-H-7	2E-05	3E-06	2E-06	6E-06	5E-07	3E-07
100-D-4	1E-05	6E-07	1E-07	1E-06	7E-08	2E-08
100-D-49:2	1E-05	1E-06	6E-07	1E-06	2E-07	1E-07
116-DR-6	1E-05	1E-06	6E-07	4E-06	2E-07	1E-07
116-DR-7	8E-06	8E-07	5E-07	2E-06	2E-07	9E-08
1607-D2:3	8E-06	4E-07	4E-08	2E-06	9E-08	9E-09
100-H-17	5E-06	2E-06	2E-06	7E-07	3E-07	2E-07
1607-H2	4E-06	3E-06	3E-06	5E-07	4E-07	3E-07
100-D-21	3E-06	1E-07	2E-08	3E-07	2E-08	3E-09
100-H-5	3E-06	2E-06	2E-06	4E-07	3E-07	2E-07
1607-D2:1	3E-06	1E-06	1E-06	6E-07	2E-07	2E-07
116-D-2	2E-06	7E-07	5E-07	4E-07	2E-07	1E-07
122-DR-1:2	2E-06	2E-06	2E-06	4E-07	2E-07	2E-07
1607-D2:4	2E-06	5E-07	5E-07	4E-07	1E-07	9E-08
100-D-52	1E-06	6E-07	5E-07	2E-07	1E-07	1E-07
100-H-24	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
116-D-4	1E-06	6E-07	5E-07	3E-07	1E-07	1E-07
116-D-9	1E-06	7E-07	6E-07	3E-07	1E-07	1E-07
116-DR-4	1E-06	7E-07	5E-07	3E-07	1E-07	1E-07
1607-D4	4E-07	4E-07	4E-07	6E-08	6E-08	6E-08
100-D-12	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-D-22	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-97. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for 100-D/100-H Area Remediated Waste Sites for the Industrial/Commercial Scenario.

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
116-DR-9	8.4	1.5	0.26	1.8	0.26	0.045
100-D-48:3	3.6	0.7	0.14	1.1	0.22	0.056
100-D-49:4	3.2	0.17	0.039	2.1	0.12	0.032
100-D-48:2	2.9	0.34	0.077	1.1	0.095	0.031
100-D-20	2.2	0.28	0.074	0.78	0.096	0.038
118-DR-2:2	2.2	0.25	0.068	1.3	0.12	0.037
116-H-1	1.8	0.11	0.016	1.1	0.061	0.0077
100-D-48:4	1.4	0.2	0.057	0.56	0.065	0.028
116-D-1A	1.4	0.2	0.056	0.8	0.1	0.034
116-D-7	1.4	0.099	0.034	0.64	0.05	0.024
116-H-7	1.2	0.08	0.034	1.2	0.061	0.023
116-DR-1&2	1.1	0.14	0.041	0.68	0.055	0.024
100-H-21	1	0.16	0.05	0.51	0.082	0.03
100-D-48:1	0.87	0.12	0.042	0.38	0.047	0.023
116-DR-6	0.74	0.057	0.03	0.72	0.046	0.02
100-D-4	0.6	0.031	0.0037	0.25	0.013	0.0016
100-D-49:2	0.57	0.067	0.03	0.29	0.04	0.021
116-DR-7	0.43	0.043	0.024	0.42	0.036	0.017
1607-D2:3	0.4	0.02	0.0021	0.39	0.017	0.0016
100-H-17	0.23	0.074	0.041	0.12	0.044	0.028
100-D-21	0.17	0.0076	0.00099	0.066	0.003	0.00037
1607-D2:1	0.15	0.044	0.04	0.1	0.031	0.028
100-H-5	0.1	0.054	0.043	0.062	0.033	0.026
1607-H2	0.091	0.054	0.045	0.062	0.036	0.03
122-DR-1:2	0.088	0.048	0.038	0.052	0.028	0.022
1607-D2:4	0.086	0.027	0.025	0.079	0.02	0.018
116-D-2	0.081	0.037	0.027	0.074	0.031	0.021
116-D-9	0.077	0.039	0.03	0.064	0.029	0.021
116-DR-4	0.077	0.037	0.028	0.064	0.029	0.021
116-D-4	0.066	0.034	0.027	0.062	0.03	0.023
100-D-52	0.056	0.033	0.028	0.048	0.026	0.021
100-D-12	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-D-22	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-H-24	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
1607-D4	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-98. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for 100-D/100-H Area Remediated Waste Sites for the Industrial/Commercial Scenario.

Waste Site	RME Hazard Indices	CTE Hazard Indices
100-H-21	0.026	0.0094
1607-H2	0.024	0.0058
116-H-7	0.014	0.0056
116-H-1	0.012	0.0041
100-H-24	0.0094	0.0039
100-H-5	0.0093	0.0035
118-DR-2:2	0.0089	0.0042
100-H-17	0.0077	0.0034
122-DR-1:2	0.0068	0.0029
1607-D4	0.0043	0.0021
100-D-4	0.0042	0.0019
1607-D2:1	0.0039	0.0017
100-D-20	0.0022	0.00099
100-D-48:4	0.0017	0.00079
116-D-7	0.0015	0.00076
100-D-48:3	0.0014	0.0007
116-D-1A	0.0014	0.00068
116-D-9	0.0014	0.00062
116-DR-7	0.0014	0.00058
100-D-48:2	0.0013	0.00067
100-D-49:4	0.0013	0.00068
116-DR-1&2	0.0013	0.00066
116-DR-4	0.0013	0.00062
100-D-48:1	0.0012	0.00061
100-D-52	0.0012	0.00054
116-D-2	0.0012	0.00062
116-DR-6	0.0012	0.00055
1607-D2:4	0.0012	0.00061
116-D-4	0.0011	0.0006
100-D-49:2	0.001	0.0005
116-DR-9	0.00043	0.0002
1607-D2:3	0.0002	0.00012
100-D-12	-- [a]	-- [a]
100-D-21	-- [a]	-- [a]
100-D-22	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-99. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for 100-D/100-H Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a]

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	2E-05	2E-06	1E-06	4E-06	3E-07	1E-07
116-DR-9	3E-04	5E-05	8E-06	2E-05	2E-06	4E-07
100-D-48:2	1E-04	1E-05	3E-06	9E-06	8E-07	3E-07
100-D-48:3	1E-04	2E-05	5E-06	9E-06	2E-06	5E-07
100-D-49:4	1E-04	5E-06	1E-06	2E-05	1E-06	3E-07
100-D-20	7E-05	9E-06	2E-06	6E-06	8E-07	3E-07
118-DR-2:2	7E-05	1E-05	4E-06	1E-05	1E-06	5E-07
116-H-1	6E-05	7E-06	4E-06	9E-06	8E-07	3E-07
100-D-48:4	5E-05	7E-06	2E-06	5E-06	5E-07	2E-07
116-D-1A	5E-05	7E-06	2E-06	7E-06	9E-07	3E-07
116-D-7	5E-05	3E-06	1E-06	5E-06	4E-07	2E-07
100-H-21	4E-05	1E-05	8E-06	5E-06	1E-06	9E-07
116-DR-1&2	4E-05	5E-06	1E-06	6E-06	5E-07	2E-07
116-H-7	4E-05	5E-06	4E-06	1E-05	8E-07	5E-07
100-D-48:1	3E-05	4E-06	1E-06	3E-06	4E-07	2E-07
100-D-4	2E-05	1E-06	2E-07	2E-06	1E-07	3E-08
100-D-49:2	2E-05	2E-06	1E-06	2E-06	3E-07	2E-07
116-DR-6	2E-05	2E-06	1E-06	6E-06	4E-07	2E-07
116-DR-7	1E-05	1E-06	8E-07	4E-06	3E-07	1E-07
1607-D2:3	1E-05	7E-07	8E-08	3E-06	1E-07	2E-08
100-H-17	9E-06	4E-06	3E-06	1E-06	5E-07	4E-07
1607-H2	6E-06	5E-06	5E-06	8E-07	6E-07	6E-07
100-D-21	5E-06	3E-07	4E-08	6E-07	3E-08	6E-09
100-H-5	5E-06	4E-06	3E-06	7E-07	5E-07	4E-07
1607-D2:1	5E-06	2E-06	2E-06	9E-07	3E-07	3E-07
122-DR-1:2	4E-06	3E-06	3E-06	6E-07	4E-07	3E-07
116-D-2	3E-06	1E-06	9E-07	6E-07	3E-07	2E-07
116-D-9	3E-06	1E-06	1E-06	5E-07	2E-07	2E-07
116-DR-4	3E-06	1E-06	9E-07	5E-07	2E-07	2E-07
1607-D2:4	3E-06	9E-07	8E-07	7E-07	2E-07	2E-07
100-D-52	2E-06	1E-06	9E-07	4E-07	2E-07	2E-07
100-H-24	2E-06	2E-06	2E-06	2E-07	2E-07	2E-07
116-D-4	2E-06	1E-06	9E-07	5E-07	2E-07	2E-07
1607-D4	7E-07	7E-07	7E-07	9E-08	9E-08	9E-08
100-D-12	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-D-22	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-100. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for 100-D/100-H Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a]

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	0.80	0.047	0.013	0.78	0.042	0.010
116-DR-9	15	2.6	0.46	3.1	0.44	0.076
100-D-48:3	6.2	1.2	0.25	1.9	0.37	0.093
100-D-49:4	5.7	0.29	0.068	3.4	0.2	0.053
100-D-48:2	5.2	0.6	0.13	1.8	0.16	0.052
100-D-20	3.9	0.49	0.13	1.3	0.16	0.064
118-DR-2:2	3.8	0.45	0.12	2.1	0.18	0.053
116-H-1	3.2	0.2	0.027	1.8	0.1	0.013
100-D-48:4	2.4	0.35	0.099	0.94	0.11	0.047
116-D-1A	2.4	0.35	0.098	1.3	0.17	0.056
116-D-7	2.4	0.17	0.059	1.1	0.083	0.04
116-H-7	2.1	0.14	0.059	1.9	0.1	0.039
116-DR-1&2	2	0.24	0.071	1.1	0.093	0.041
100-H-21	1.8	0.29	0.087	0.85	0.14	0.051
100-D-48:1	1.5	0.21	0.073	0.64	0.079	0.039
116-DR-6	1.3	0.1	0.052	1.2	0.077	0.034
100-D-4	1	0.054	0.0067	0.43	0.023	0.0031
100-D-49:2	1	0.12	0.053	0.48	0.066	0.035
116-DR-7	0.75	0.075	0.042	0.71	0.06	0.029
1607-D2:3	0.7	0.034	0.0039	0.65	0.029	0.003
100-H-17	0.41	0.13	0.071	0.2	0.074	0.047
100-D-21	0.29	0.014	0.002	0.11	0.0053	0.00096
1607-D2:1	0.26	0.074	0.068	0.17	0.051	0.047
100-H-5	0.18	0.093	0.074	0.1	0.056	0.044
1607-H2	0.16	0.093	0.077	0.1	0.061	0.05
122-DR-1:2	0.15	0.083	0.066	0.088	0.046	0.037
1607-D2:4	0.15	0.048	0.043	0.13	0.034	0.031
116-D-2	0.14	0.064	0.047	0.12	0.052	0.036
116-D-9	0.13	0.067	0.052	0.11	0.048	0.035
116-DR-4	0.13	0.065	0.049	0.11	0.048	0.035
116-D-4	0.12	0.059	0.046	0.1	0.05	0.038
100-D-52	0.097	0.058	0.048	0.08	0.043	0.035
100-D-12	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-D-22	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-H-24	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
1607-D4	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-101. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for 100-D/100-H Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a]

Waste Site	RME Hazard Indices	CTE Hazard Indices
Broad-area component [b]	0.025	0.0079
100-H-21	0.042	0.017
1607-H2	0.038	0.011
116-H-7	0.024	0.011
116-H-1	0.021	0.0084
100-H-24	0.017	0.0083
100-H-5	0.016	0.0072
118-DR-2:2	0.015	0.0081
100-H-17	0.014	0.007
122-DR-1:2	0.012	0.0063
100-D-4	0.0092	0.0056
1607-D4	0.0082	0.005
1607-D2:1	0.0077	0.0043
100-D-20	0.005	0.0031
100-D-48:4	0.0043	0.0028
116-D-7	0.004	0.0027
100-D-48:3	0.0039	0.0026
116-D-9	0.0039	0.0025
116-D-1A	0.0038	0.0026
116-DR-7	0.0038	0.0025
100-D-48:2	0.0037	0.0026
100-D-49:4	0.0037	0.0026
116-DR-1&2	0.0037	0.0026
116-DR-4	0.0037	0.0025
100-D-48:1	0.0036	0.0025
116-D-2	0.0036	0.0025
1607-D2:4	0.0036	0.0025
100-D-52	0.0035	0.0024
116-D-4	0.0035	0.0025
116-DR-6	0.0035	0.0024
100-D-49:2	0.0033	0.0024
116-DR-9	0.0024	0.0019
1607-D2:3	0.0021	0.0018
100-D-12	-- [c]	-- [c]
100-D-21	-- [c]	-- [c]
100-D-22	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-102. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for 100-D/100-H Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
100-H-21	2E-03	2E-03	2E-03	2E-04	2E-04	2E-04
116-H-1	1E-03	1E-03	1E-03	1E-04	9E-05	9E-05
116-H-7	1E-03	8E-04	8E-04	1E-04	8E-05	8E-05
1607-H2	1E-03	1E-03	1E-03	1E-04	1E-04	1E-04
118-DR-2:2	8E-04	6E-04	5E-04	9E-05	6E-05	6E-05
100-H-17	7E-04	6E-04	5E-04	6E-05	6E-05	6E-05
100-H-24	7E-04	7E-04	7E-04	7E-05	7E-05	7E-05
100-H-5	7E-04	7E-04	7E-04	6E-05	6E-05	6E-05
116-DR-9	7E-04	1E-04	2E-05	4E-05	7E-06	1E-06
122-DR-1:2	5E-04	5E-04	5E-04	5E-05	5E-05	5E-05
100-D-48:3	4E-04	8E-05	2E-05	3E-05	6E-06	2E-06
100-D-20	2E-04	3E-05	1E-05	2E-05	3E-06	2E-06
100-D-48:2	2E-04	3E-05	1E-05	2E-05	3E-06	1E-06
100-D-48:4	2E-04	3E-05	9E-06	1E-05	2E-06	1E-06
100-D-49:4	2E-04	2E-05	8E-06	4E-05	3E-06	1E-06
116-D-1A	2E-04	3E-05	9E-06	2E-05	3E-06	1E-06
1607-D2:1	2E-04	2E-04	2E-04	2E-05	2E-05	2E-05
1607-D4	2E-04	2E-04	2E-04	3E-05	3E-05	3E-05
116-D-7	1E-04	2E-05	7E-06	1E-05	2E-06	1E-06
116-DR-1&2	1E-04	2E-05	7E-06	2E-05	2E-06	1E-06
116-DR-6	1E-04	2E-05	7E-06	2E-05	2E-06	9E-07
100-D-48:1	9E-05	2E-05	7E-06	9E-06	2E-06	9E-07
116-D-9	7E-05	2E-05	7E-06	4E-06	1E-06	9E-07
100-D-4	6E-05	6E-06	2E-06	6E-06	6E-07	3E-07
100-D-49:2	6E-05	1E-05	5E-06	7E-06	1E-06	8E-07
116-DR-7	4E-05	9E-06	6E-06	9E-06	1E-06	8E-07
116-DR-4	3E-05	1E-05	6E-06	2E-06	1E-06	9E-07
1607-D2:3	3E-05	1E-06	2E-07	8E-06	4E-07	4E-08
100-D-21	2E-05	2E-06	4E-07	2E-06	2E-07	3E-08
116-D-2	2E-05	8E-06	5E-06	2E-06	1E-06	9E-07
1607-D2:4	9E-06	5E-06	5E-06	2E-06	9E-07	8E-07
116-D-4	8E-06	5E-06	5E-06	2E-06	1E-06	9E-07
100-D-52	7E-06	5E-06	5E-06	1E-06	9E-07	8E-07

Table 5-102. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for 100-D/100-H Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
100-D-12	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-D-22	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-103. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for 100-D/100-H Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
116-DR-9	34	6.2	1.1	6.8	1.1	0.19
100-D-48:3	21	4.3	1	4.5	0.99	0.33
118-DR-2:2	19	3.9	1.1	5.5	0.82	0.31
116-H-1	14	2	0.34	5.3	0.61	0.096
100-D-49:4	12	1.2	0.5	6.5	0.59	0.25
100-D-48:2	11	1.8	0.59	3.7	0.5	0.24
100-D-20	8.9	1.6	0.72	2.9	0.57	0.33
100-H-17	8.8	2	0.71	1.6	0.49	0.27
116-D-1A	8.3	1.6	0.57	3	0.54	0.24
100-D-48:4	8.2	1.6	0.58	2.4	0.46	0.24
100-H-21	6.9	2	0.87	2.3	0.58	0.29
116-DR-6	6.9	1.3	0.53	2.8	0.38	0.2
116-H-7	6.4	1.3	0.67	3.7	0.39	0.23
116-D-7	6.1	0.95	0.46	2.3	0.36	0.22
116-DR-1&2	5.5	1	0.45	2.4	0.36	0.21
100-D-48:1	5	1	0.45	1.5	0.32	0.19
116-D-9	5	1.2	0.5	0.77	0.29	0.19
100-D-49:2	3.2	0.67	0.36	1.2	0.27	0.17
100-D-4	3.1	0.35	0.055	0.92	0.075	0.011
116-DR-7	2.5	0.62	0.4	1.4	0.23	0.17
116-DR-4	2.3	0.77	0.45	0.46	0.24	0.19
100-H-5	2	0.79	0.53	0.63	0.31	0.24
1607-H2	1.4	0.77	0.62	0.45	0.31	0.28
116-D-2	1.2	0.53	0.38	0.37	0.22	0.19
1607-D2:3	1.2	0.066	0.0076	1.1	0.052	0.0052

Table 5-103. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for 100-D/100-H Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
100-D-21	1.1	0.14	0.024	0.37	0.042	0.0067
1607-D2:1	0.9	0.56	0.54	0.5	0.28	0.27
122-DR-1:2	0.72	0.54	0.49	0.32	0.23	0.21
1607-D2:4	0.55	0.36	0.34	0.36	0.19	0.18
116-D-4	0.5	0.37	0.33	0.33	0.22	0.19
100-D-52	0.46	0.36	0.33	0.27	0.19	0.17
100-D-12	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-D-22	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-H-24	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
1607-D4	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-104. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for 100-D/100-H Area Remediated Waste Sites for the Subsistence Farmer Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
1607-H2	69	6.1
100-H-21	12	3.4
116-H-1	5.9	1.6
100-H-5	4.7	1.6
116-H-7	4.7	1.5
100-H-24	3.6	1.2
100-H-17	3	1.1
118-DR-2:2	2.9	1.2
122-DR-1:2	2.6	0.95
1607-D4	1.4	0.58
1607-D2:1	1.2	0.43
1607-D2:3	0.63	0.17
100-D-49:4	0.56	0.27
100-D-20	0.25	0.11
100-D-48:4	0.21	0.091
116-D-7	0.18	0.089
100-D-48:3	0.17	0.078
116-D-1A	0.16	0.077

Table 5-104. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for 100-D/100-H Area Remediated Waste Sites for the Subsistence Farmer Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
116-D-9	0.16	0.066
100-D-48:2	0.15	0.072
116-DR-4	0.15	0.067
116-DR-7	0.15	0.061
100-D-48:1	0.14	0.068
116-D-2	0.14	0.066
116-DR-1&2	0.14	0.071
100-D-52	0.13	0.056
116-D-4	0.13	0.063
116-DR-6	0.13	0.058
1607-D2:4	0.13	0.065
100-D-4	0.12	0.051
100-D-49:2	0.11	0.052
116-DR-9	0.054	0.018
100-D-12	-- [b]	-- [b]
100-D-21	-- [b]	-- [b]
100-D-22	-- [b]	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] Hazard indices pertain to the child receptor.
[b] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-105. Total Cancer Risks for 100-D/100-H Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
100-H-21	4E-02	3E-02	3E-02
116-H-1	2E-02	2E-02	2E-02
1607-H2	2E-02	2E-02	2E-02
100-H-24	1E-02	1E-02	1E-02
100-H-5	1E-02	1E-02	1E-02
116-H-7	1E-02	1E-02	1E-02
118-DR-2:2	1E-02	8E-03	8E-03
100-H-17	9E-03	9E-03	9E-03
122-DR-1:2	7E-03	7E-03	7E-03
1607-D4	4E-03	4E-03	4E-03
1607-D2:1	3E-03	3E-03	3E-03

Table 5-105. Total Cancer Risks for 100-D/100-H Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
100-D-48:3	2E-03	3E-04	7E-05
116-DR-9	2E-03	4E-04	8E-05
100-D-49:4	9E-04	1E-04	4E-05
100-D-48:2	8E-04	1E-04	3E-05
100-D-48:4	7E-04	1E-04	3E-05
116-D-1A	7E-04	1E-04	3E-05
100-D-20	6E-04	1E-04	4E-05
116-DR-6	6E-04	1E-04	3E-05
116-D-7	5E-04	7E-05	3E-05
116-D-9	5E-04	1E-04	3E-05
100-D-48:1	4E-04	8E-05	3E-05
116-DR-1&2	4E-04	7E-05	2E-05
100-D-4	3E-04	4E-05	9E-06
100-D-49:2	2E-04	5E-05	2E-05
116-DR-4	2E-04	5E-05	2E-05
116-DR-7	2E-04	4E-05	2E-05
100-D-21	1E-04	1E-05	2E-06
116-D-2	1E-04	3E-05	2E-05
1607-D2:3	8E-05	4E-06	6E-07
116-D-4	3E-05	2E-05	1E-05
1607-D2:4	3E-05	2E-05	2E-05
100-D-52	2E-05	2E-05	1E-05
100-D-12	-- [a]	-- [a]	-- [a]
100-D-22	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-106. Total Radiation Dose (mrem/yr) for 100-D/100-H Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
116-DR-9	42	7.8	1.6
118-DR-2:2	39	8.6	2.4
100-D-48:3	33	6.5	1.4
116-H-1	28	4.5	0.77
100-H-17	20	4.1	1.1
100-D-49:4	16	2	0.74

Table 5-106. Total Radiation Dose (mrem/yr) for 100-D/100-H Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
100-D-48:2	15	2.3	0.68
100-H-21	14	4.8	2
100-D-48:4	13	2.6	0.74
116-D-1A	13	2.6	0.74
116-DR-6	13	2.5	0.74
116-H-7	12	3.1	1.3
100-D-20	11	2	0.78
116-D-9	11	2.4	0.71
116-D-7	8.7	1.4	0.54
100-D-48:1	8	1.6	0.57
116-DR-1&2	8	1.5	0.53
100-D-4	5.2	0.71	0.12
100-D-49:2	5	0.99	0.42
116-DR-4	4.8	1.2	0.53
116-DR-7	4	0.87	0.44
100-H-5	3.9	1.2	0.61
1607-H2	2.3	0.94	0.65
100-D-21	2.1	0.32	0.055
116-D-2	2.1	0.7	0.42
1607-D2:3	1.4	0.074	0.0086
1607-D2:1	1.1	0.71	0.68
122-DR-1:2	0.76	0.56	0.5
1607-D2:4	0.57	0.36	0.34
116-D-4	0.53	0.38	0.34
100-D-52	0.47	0.37	0.34
100-D-12	-- [a]	-- [a]	-- [a]
100-D-22	-- [a]	-- [a]	-- [a]
100-H-24	-- [a]	-- [a]	-- [a]
1607-D4	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-107. Hazard Indices for 100-D/100-H Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. [a]

Waste Site	Present Day
1607-H2	380
100-H-21	140
116-H-1	69
116-H-7	53
100-H-5	47
100-H-24	41
100-H-17	34
118-DR-2:2	32
122-DR-1:2	29
1607-D4	15
1607-D2:1	11
1607-D2:3	3.1
100-D-49:4	2.3
100-D-20	0.5
100-D-48:4	0.36
116-D-7	0.32
116-D-9	0.32
100-D-48:3	0.31
116-D-1A	0.3
116-DR-7	0.3
100-D-48:2	0.29
116-DR-4	0.29
116-DR-1&2	0.28
116-D-2	0.27
1607-D2:4	0.27
100-D-48:1	0.26
116-DR-6	0.26
100-D-52	0.25
116-D-4	0.25
100-D-4	0.24
100-D-49:2	0.22
116-DR-9	0.048
100-D-12	-- [b]
100-D-21	-- [b]
100-D-22	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] Hazard indices pertain to the child receptor.

[b] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-108. Total Cancer Risks for 100-D/100-H Area Remediated Waste Sites for the Yakama Scenario.

Waste Site	Present Day	2075	2150
100-H-21	4E-02	3E-02	3E-02
116-H-1	2E-02	2E-02	2E-02
1607-H2	2E-02	2E-02	2E-02
100-H-17	1E-02	9E-03	9E-03
100-H-24	1E-02	1E-02	1E-02
100-H-5	1E-02	1E-02	1E-02
116-H-7	1E-02	1E-02	1E-02
118-DR-2:2	1E-02	9E-03	8E-03
122-DR-1:2	7E-03	7E-03	7E-03
1607-D4	4E-03	4E-03	4E-03
116-DR-9	3E-03	6E-04	1E-04
1607-D2:1	3E-03	3E-03	3E-03
100-D-48:3	2E-03	4E-04	9E-05
100-D-48:2	9E-04	2E-04	4E-05
100-D-49:4	9E-04	1E-04	4E-05
100-D-48:4	8E-04	2E-04	4E-05
116-D-1A	8E-04	2E-04	4E-05
116-DR-6	8E-04	1E-04	4E-05
100-D-20	7E-04	1E-04	4E-05
116-D-9	6E-04	1E-04	4E-05
100-D-48:1	5E-04	9E-05	3E-05
116-D-7	5E-04	9E-05	3E-05
116-DR-1&2	5E-04	9E-05	3E-05
100-D-4	3E-04	5E-05	1E-05
100-D-49:2	3E-04	6E-05	2E-05
116-DR-4	3E-04	7E-05	3E-05
116-DR-7	2E-04	5E-05	2E-05
100-D-21	1E-04	2E-05	3E-06
116-D-2	1E-04	4E-05	2E-05
1607-D2:3	8E-05	5E-06	7E-07
100-D-52	3E-05	2E-05	2E-05
116-D-4	3E-05	2E-05	2E-05
1607-D2:4	3E-05	2E-05	2E-05
100-D-12	-- [a]	-- [a]	-- [a]
100-D-22	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-109. Total Radiation Dose (mrem/yr) for 100-D/100-H Area Remediated Waste Sites for the Yakama Scenario.

Waste Site	Present Day	2075	2150
116-DR-9	49	9.3	1.8
118-DR-2:2	46	9.9	2.7
100-D-48:3	40	7.9	1.7
116-H-1	33	5.5	0.94
100-H-17	25	5.1	1.3
100-D-48:2	17	2.7	0.79
100-D-49:4	17	2.3	0.81
100-D-48:4	16	3.1	0.86
116-D-1A	16	3.1	0.87
116-DR-6	16	3	0.86
100-H-21	15	5	2
116-D-9	14	3	0.83
100-D-20	13	2.3	0.88
116-H-7	12	3.2	1.4
116-D-7	9.9	1.7	0.63
100-D-48:1	9.5	1.9	0.64
116-DR-1&2	9.3	1.8	0.6
100-D-4	6.1	0.87	0.14
116-DR-4	5.9	1.5	0.61
100-D-49:2	5.8	1.2	0.47
100-H-5	4.7	1.4	0.68
116-DR-7	4.6	1	0.5
1607-H2	2.8	1.1	0.73
116-D-2	2.6	0.82	0.47
100-D-21	2.5	0.39	0.067
1607-D2:3	1.4	0.082	0.01
1607-D2:1	1.1	0.74	0.71
122-DR-1:2	0.86	0.63	0.56
1607-D2:4	0.61	0.4	0.38
116-D-4	0.59	0.42	0.37
100-D-52	0.53	0.41	0.37
100-D-12	-- [a]	-- [a]	-- [a]
100-D-22	-- [a]	-- [a]	-- [a]
100-H-24	-- [a]	-- [a]	-- [a]
1607-D4	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-110. Hazard Indices for 100-D/100-H Area Remediated Waste Sites for the Yakama Scenario. [a]

Waste Site	Present Day
1607-H2	430
100-H-21	76
116-H-1	38
100-H-5	29
116-H-7	29
100-H-24	23
100-H-17	19
118-DR-2:2	18
122-DR-1:2	16
1607-D4	8.6
1607-D2:1	6.4
1607-D2:3	3.9
100-D-49:4	2.8
100-D-20	0.44
100-D-48:4	0.43
116-D-7	0.36
100-D-48:3	0.31
116-D-1A	0.3
116-D-9	0.28
100-D-48:1	0.27
100-D-4	0.26
100-D-48:2	0.26
116-DR-4	0.26
116-DR-7	0.26
116-DR-1&2	0.25
116-D-2	0.24
116-DR-6	0.23
1607-D2:4	0.23
100-D-52	0.22
116-D-4	0.22
100-D-49:2	0.19
116-DR-9	0.16
100-D-12	-- [b]
100-D-21	-- [b]
100-D-22	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] Hazard indices pertain to the child receptor.

[b] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-111. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
116-F-14	2E-04	7E-06	1E-06	1E-05	6E-07	1E-07
UPR-100-F-2	6E-05	2E-06	2E-07	3E-06	2E-07	2E-08
116-F-10	4E-05	5E-06	1E-06	7E-06	6E-07	1E-07
116-F-2	3E-05	2E-06	2E-07	6E-06	3E-07	3E-08
118-F-8:1	3E-05	3E-06	1E-06	4E-06	4E-07	1E-07
100-F-19:2	2E-05	1E-06	6E-07	3E-06	2E-07	9E-08
116-F-1	2E-05	3E-06	2E-06	5E-06	4E-07	2E-07
116-F-6	2E-05	3E-06	4E-07	3E-06	3E-07	5E-08
1607-F2	2E-05	9E-07	1E-07	3E-06	2E-07	2E-08
100-100-F-25	5E-06	3E-07	4E-08	1E-06	8E-08	1E-08
100-F-37	5E-06	5E-06	5E-06	6E-07	6E-07	6E-07
116-F-5	5E-06	1E-06	6E-07	7E-07	1E-07	7E-08
116-F-4	4E-06	6E-07	4E-07	1E-06	2E-07	1E-07
1607-F6	4E-06	1E-06	8E-07	8E-07	2E-07	1E-07
100-F-2	3E-06	6E-07	1E-07	5E-07	1E-07	2E-08
600-23	2E-06	2E-06	2E-06	2E-07	2E-07	2E-07
600-107	1E-06	2E-07	5E-08	3E-07	7E-08	1E-08
600-190	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
600-235	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
100-F-19:1	9E-07	2E-07	4E-08	1E-07	3E-08	6E-09
100-F-26:1	9E-07	9E-07	9E-07	1E-07	1E-07	9E-08
600-131	9E-07	9E-07	9E-07	1E-07	1E-07	1E-07
600-181	9E-07	9E-07	9E-07	1E-07	1E-07	1E-07
628-1	9E-07	9E-07	9E-07	1E-07	1E-07	1E-07
100-F-24	8E-07	2E-07	3E-08	2E-07	4E-08	8E-09
600-132	8E-07	8E-07	8E-07	9E-08	9E-08	9E-08
600-204	8E-07	8E-07	8E-07	1E-07	1E-07	1E-07
100-F-12	7E-07	7E-07	7E-07	9E-08	9E-08	9E-08
100-F-26:7	7E-07	7E-07	7E-07	9E-08	9E-08	9E-08
100-F-38	7E-07	7E-07	7E-07	8E-08	8E-08	8E-08
100-F-7	7E-07	7E-07	7E-07	9E-08	9E-08	9E-08
100-F-9	7E-07	7E-07	7E-07	9E-08	9E-08	9E-08
100-F-26:2	6E-07	6E-07	6E-07	8E-08	8E-08	8E-08
100-F-26:5	6E-07	6E-07	6E-07	8E-08	8E-08	8E-08
600-128	6E-07	6E-07	6E-07	8E-08	8E-08	8E-08
100-F-14	5E-07	5E-07	5E-07	7E-08	7E-08	7E-08
100-F-18	5E-07	5E-07	5E-07	6E-08	6E-08	6E-08
116-F-9	5E-07	9E-08	2E-08	4E-08	8E-09	2E-09

Table 5-111. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
100-F-35	1E-07	2E-08	8E-09	1E-08	3E-09	1E-09
100-F-23	2E-08	7E-09	5E-09	1E-09	1E-09	0E+00
100-F-15	5E-09	5E-09	5E-09	1E-09	1E-09	1E-09
100-F-16	5E-09	5E-09	5E-09	1E-09	1E-09	1E-09
116-F-3	5E-09	5E-09	5E-09	1E-09	1E-09	1E-09
100-F-11	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-112. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
116-F-14	8.6	0.36	0.031	2	0.11	0.013
UPR-100-F-2	2.9	0.12	0.011	0.64	0.037	0.0044
116-F-10	2.1	0.28	0.066	1.3	0.12	0.03
116-F-2	1.8	0.085	0.0083	1.2	0.055	0.0053
118-F-8:1	1.4	0.14	0.039	0.74	0.084	0.027
100-F-19:2	1.3	0.078	0.032	0.63	0.043	0.018
116-F-6	1.2	0.14	0.023	0.63	0.065	0.01
116-F-1	1.1	0.061	0.0072	1	0.045	0.0042
1607-F2	1	0.05	0.0052	0.67	0.033	0.0034
100-F-25	0.27	0.017	0.0021	0.27	0.017	0.0021
116-F-5	0.24	0.036	0.0061	0.13	0.018	0.003
116-F-4	0.21	0.032	0.021	0.2	0.031	0.02
1607-F6	0.2	0.045	0.03	0.16	0.029	0.019
100-F-2	0.16	0.032	0.0057	0.096	0.019	0.0034
600-107	0.065	0.013	0.0023	0.065	0.013	0.0023
100-F-19:1	0.046	0.0092	0.0017	0.025	0.005	0.00092
100-F-24	0.042	0.0084	0.0015	0.041	0.0082	0.0015
600-23	0.021	0.0099	0.0073	0.021	0.0095	0.0069
116-F-9	0.02	0.0039	0.0007	0.0065	0.0012	0.00024
100-F-35	0.0046	0.00091	0.0002	0.002	0.00041	0.000096
100-F-26:1	0.00086	0.00021	0.000087	0.00075	0.00017	0.000057
100-F-23	0.00057	0.00015	0.000076	0.000053	0.000036	0

Table 5-112. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
100-F-11	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-12	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-14	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-15	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-16	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-18	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-26:2	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-26:5	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-26:7	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-37	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-38	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-7	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-9	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
116-F-3	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-128	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-131	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-132	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-181	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-190	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-204	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-235	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
628-1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-113. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Industrial/Commercial Scenario. (3 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
600-23	0.05	0.0091
600-190	0.046	0.02
100-F-37	0.033	0.016
118-F-8:1	0.023	0.0042
1607-F6	0.016	0.0067
600-132	0.012	0.0054

Table 5-113. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Industrial/Commercial Scenario. (3 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
116-F-1	0.011	0.0046
600-235	0.0086	0.003
100-F-38	0.007	0.003
100-F-26:1	0.0065	0.0026
100-F-12	0.0063	0.003
600-131	0.006	0.0029
600-181	0.0057	0.0028
628-1	0.0056	0.0028
600-204	0.0054	0.0027
100-F-9	0.0053	0.0026
116-F-14	0.0051	0.0021
100-F-7	0.005	0.0025
100-F-26:2	0.0048	0.0024
100-F-26:7	0.0047	0.0023
600-128	0.0043	0.0021
100-F-26:5	0.0041	0.002
100-F-14	0.0038	0.0019
116-F-5	0.0035	0.0016
100-F-18	0.0033	0.0017
100-F-19:2	0.0023	0.00077
116-F-10	0.0018	0.00062
116-F-4	0.0016	0.00086
116-F-2	0.00038	0.00023
100-F-25	0.00034	0.00015
116-F-3	0.00023	0.00016
100-F-19:1	0.00022	0.00015
100-F-16	0.0002	0.00014
116-F-6	0.0002	0.00014
100-F-15	0.00019	0.00014
100-F-11	0.00011	0.0001
100-F-2	-- [a]	-- [a]
100-F-23	-- [a]	-- [a]
100-F-24	-- [a]	-- [a]
100-F-35	-- [a]	-- [a]
116-F-9	-- [a]	-- [a]
1607-F2	-- [a]	-- [a]

Table 5-113. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Industrial/Commercial Scenario. (3 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
600-107	-- [a]	-- [a]
UPR-100-F-2	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-114. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	2E-05	2E-06	1E-06	4E-06	3E-07	1E-07
116-F-14	3E-04	1E-05	2E-06	2E-05	1E-06	2E-07
UPR-100-F-2	1E-04	4E-06	4E-07	5E-06	3E-07	4E-08
116-F-10	7E-05	9E-06	2E-06	1E-05	1E-06	2E-07
116-F-2	6E-05	3E-06	3E-07	1E-05	5E-07	5E-08
118-F-8:1	5E-05	5E-06	2E-06	6E-06	7E-07	3E-07
100-F-19:2	4E-05	3E-06	1E-06	5E-06	4E-07	2E-07
116-F-1	4E-05	5E-06	3E-06	9E-06	7E-07	3E-07
116-F-6	4E-05	5E-06	8E-07	5E-06	5E-07	9E-08
1607-F2	3E-05	2E-06	2E-07	6E-06	3E-07	3E-08
100-F-25	9E-06	6E-07	8E-08	2E-06	1E-07	2E-08
116-F-5	9E-06	2E-06	1E-06	1E-06	2E-07	1E-07
100-F-37	8E-06	8E-06	8E-06	1E-06	1E-06	1E-06
116-F-4	7E-06	1E-06	7E-07	2E-06	3E-07	2E-07
1607-F6	7E-06	2E-06	1E-06	1E-06	3E-07	2E-07
100-F-2	5E-06	1E-06	2E-07	8E-07	2E-07	3E-08
600-23	3E-06	3E-06	3E-06	4E-07	3E-07	3E-07
100-F-19:1	2E-06	3E-07	7E-08	2E-07	4E-08	1E-08
600-107	2E-06	4E-07	9E-08	5E-07	1E-07	2E-08
600-190	2E-06	2E-06	2E-06	3E-07	3E-07	3E-07
600-235	2E-06	2E-06	2E-06	2E-07	2E-07	2E-07
100-F-12	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
100-F-24	1E-06	3E-07	6E-08	3E-07	7E-08	1E-08
100-F-26:1	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
100-F-26:2	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
100-F-26:7	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
100-F-38	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
100-F-7	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
100-F-9	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
600-128	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
600-131	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07

Table 5-114. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
600-132	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
600-181	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
600-204	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
628-1	1E-06	1E-06	1E-06	2E-07	2E-07	2E-07
100-F-14	9E-07	9E-07	9E-07	1E-07	1E-07	1E-07
100-F-26:5	9E-07	9E-07	9E-07	1E-07	1E-07	1E-07
100-F-18	8E-07	8E-07	8E-07	1E-07	1E-07	1E-07
116-F-9	8E-07	2E-07	4E-08	6E-08	1E-08	5E-09
100-F-35	2E-07	4E-08	2E-08	2E-08	6E-09	3E-09
100-F-23	3E-08	2E-08	1E-08	3E-09	3E-09	0E+00
100-F-15	1E-08	1E-08	1E-08	3E-09	3E-09	3E-09
100-F-16	1E-08	1E-08	1E-08	3E-09	3E-09	3E-09
116-F-3	1E-08	1E-08	1E-08	3E-09	3E-09	3E-09
100-F-11	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-115. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	0.80	0.047	0.013	0.78	0.042	0.010
116-F-14	15	0.62	0.055	3.3	0.19	0.022
UPR-100-F-2	5.1	0.22	0.02	1.1	0.062	0.0077
116-F-10	3.7	0.49	0.12	2.3	0.21	0.05
116-F-2	3.2	0.15	0.015	2	0.092	0.0093
118-F-8:1	2.5	0.25	0.068	1.2	0.14	0.046
100-F-19:2	2.2	0.14	0.055	1.1	0.073	0.03
116-F-6	2	0.25	0.04	1	0.11	0.017
116-F-1	1.9	0.11	0.013	1.7	0.075	0.0074
1607-F2	1.8	0.088	0.0095	1.1	0.055	0.006
100-F-25	0.47	0.03	0.004	0.45	0.028	0.0038
116-F-5	0.41	0.063	0.011	0.21	0.03	0.0053
116-F-4	0.36	0.056	0.036	0.34	0.052	0.033
1607-F6	0.36	0.079	0.052	0.27	0.049	0.033

Table 5-115. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
100-F-2	0.28	0.056	0.01	0.16	0.032	0.006
600-107	0.11	0.023	0.0044	0.11	0.022	0.0042
100-F-19:1	0.081	0.016	0.0032	0.043	0.0088	0.0019
100-F-24	0.074	0.015	0.003	0.07	0.014	0.0028
600-23	0.038	0.017	0.013	0.035	0.016	0.012
116-F-9	0.035	0.0069	0.0015	0.011	0.0024	0.00073
100-F-35	0.008	0.0019	0.00066	0.0036	0.001	0.0005
100-F-26:1	0.0018	0.00067	0.00046	0.0016	0.00062	0.00043
100-F-23	0.0013	0.00057	0.00044	0.00043	0.0004	0
100-F-11	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-12	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-14	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-15	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-16	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-18	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-26:2	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-26:5	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-26:7	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-37	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-38	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-7	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
100-F-9	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
116-F-3	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
600-128	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
600-131	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
600-132	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
600-181	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
600-190	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
600-204	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
600-235	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]
628-1	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-116. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
Broad-area component [b]	0.025	0.0079
600-23	0.09	0.02
600-190	0.083	0.044
100-F-37	0.052	0.028
118-F-8:1	0.042	0.01
1607-F6	0.03	0.016
600-132	0.023	0.012
116-F-1	0.02	0.0091
600-235	0.015	0.0066
100-F-38	0.013	0.0067
100-F-12	0.012	0.0069
100-F-26:1	0.012	0.006
600-131	0.011	0.0064
600-181	0.011	0.0063
628-1	0.011	0.0062
600-204	0.01	0.006
100-F-9	0.0099	0.0058
116-F-14	0.0097	0.0051
100-F-26:2	0.0095	0.0057
100-F-7	0.0095	0.0057
100-F-26:7	0.009	0.0054
600-128	0.0084	0.0051
100-F-26:5	0.0082	0.005
100-F-14	0.0077	0.0047
116-F-5	0.0073	0.0042
100-F-18	0.007	0.0043
100-F-19:2	0.0052	0.0028
116-F-10	0.0044	0.0025
116-F-4	0.0041	0.0029
100-F-25	0.0023	0.0018
116-F-2	0.0023	0.002
100-F-15	0.0021	0.0018
100-F-16	0.0021	0.0018
100-F-19:1	0.0021	0.0018
116-F-3	0.0021	0.0019
116-F-6	0.0021	0.0018
100-F-11	0.0019	0.0018
100-F-2	-- [c]	-- [c]
100-F-23	-- [c]	-- [c]
100-F-24	-- [c]	-- [c]
100-F-35	-- [c]	-- [c]
116-F-9	-- [c]	-- [c]
1607-F2	-- [c]	-- [c]

Table 5-116. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
600-107	-- [c]	-- [c]
UPR-100-F-2	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-117. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
100-F-37	3E-03	3E-03	3E-03	3E-04	3E-04	3E-04
116-F-1	1E-03	1E-03	1E-03	1E-04	1E-04	1E-04
116-F-14	1E-03	4E-04	4E-04	9E-05	5E-05	4E-05
600-235	7E-04	7E-04	7E-04	6E-05	6E-05	6E-05
100-F-26:1	5E-04	5E-04	5E-04	5E-05	5E-05	5E-05
600-131	5E-04	5E-04	5E-04	6E-05	6E-05	6E-05
600-181	5E-04	5E-04	5E-04	6E-05	6E-05	6E-05
600-23	5E-04	5E-04	5E-04	5E-05	5E-05	5E-05
628-1	5E-04	5E-04	5E-04	6E-05	6E-05	6E-05
100-F-12	4E-04	4E-04	4E-04	5E-05	5E-05	5E-05
100-F-26:7	4E-04	4E-04	4E-04	4E-05	4E-05	4E-05
100-F-38	4E-04	4E-04	4E-04	4E-05	4E-05	4E-05
100-F-7	4E-04	4E-04	4E-04	5E-05	5E-05	5E-05
100-F-9	4E-04	4E-04	4E-04	5E-05	5E-05	5E-05
116-F-9	4E-04	7E-05	1E-05	2E-05	4E-06	6E-07
600-132	4E-04	4E-04	4E-04	4E-05	4E-05	4E-05
600-190	4E-04	4E-04	4E-04	4E-05	4E-05	4E-05
600-204	4E-04	4E-04	4E-04	5E-05	5E-05	5E-05
100-F-14	3E-04	3E-04	3E-04	4E-05	4E-05	4E-05
100-F-18	3E-04	3E-04	3E-04	3E-05	3E-05	3E-05
100-F-26:2	3E-04	3E-04	3E-04	4E-05	4E-05	4E-05
100-F-26:5	3E-04	3E-04	3E-04	4E-05	4E-05	4E-05

Table 5-117. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
116-F-5	3E-04	3E-04	3E-04	3E-05	3E-05	3E-05
116-F-6	3E-04	6E-05	9E-06	3E-05	4E-06	6E-07
600-128	3E-04	3E-04	3E-04	4E-05	4E-05	4E-05
116-F-10	2E-04	3E-05	9E-06	3E-05	3E-06	1E-06
UPR-100-F-2	2E-04	9E-06	9E-07	1E-05	8E-07	1E-07
100-F-19:2	1E-04	2E-05	8E-06	2E-05	2E-06	1E-06
116-F-2	1E-04	6E-06	7E-07	2E-05	1E-06	1E-07
118-F-8:1	1E-04	2E-05	1E-05	2E-05	3E-06	2E-06
100-F-19:1	9E-05	4E-06	8E-07	8E-06	3E-07	7E-08
100-F-35	9E-05	2E-05	3E-06	6E-06	1E-06	2E-07
1607-F2	7E-05	4E-06	4E-07	1E-05	7E-07	8E-08
100-F-23	5E-05	2E-06	3E-07	2E-06	6E-09	0E+00
1607-F6	5E-05	2E-05	1E-05	7E-06	3E-06	2E-06
100-F-24	4E-05	3E-06	5E-07	2E-06	3E-07	5E-08
116-F-4	4E-05	1E-05	5E-06	8E-06	2E-06	1E-06
100-F-2	3E-05	7E-06	1E-06	4E-06	7E-07	1E-07
100-F-25	2E-05	3E-06	1E-06	6E-06	5E-07	1E-07
600-107	6E-06	1E-06	2E-07	2E-06	3E-07	6E-08
100-F-15	2E-08	2E-08	2E-08	6E-09	6E-09	6E-09
100-F-16	2E-08	2E-08	2E-08	6E-09	6E-09	6E-09
116-F-3	2E-08	2E-08	2E-08	7E-09	7E-09	7E-09
100-F-11	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-118. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Subsistence Farmer Scenario. (3 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
116-F-14	32	1.9	0.29	6.8	0.44	0.062
116-F-9	32	5.6	0.93	5.1	0.92	0.15
116-F-6	22	3.8	0.64	5	0.77	0.13
UPR-100-F-2	8.8	0.41	0.04	1.9	0.12	0.014
116-F-10	7.5	1.4	0.55	4.1	0.51	0.21

Table 5-118. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Subsistence Farmer Scenario. (3 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
118-F-8:1	7.2	1.2	0.52	2.9	0.52	0.25
100-F-19:2	7	0.95	0.54	2.6	0.33	0.19
100-F-35	6.5	1.2	0.21	1.5	0.28	0.047
116-F-2	6.3	0.28	0.03	3.5	0.17	0.017
116-F-1	5.3	0.21	0.027	3.5	0.14	0.014
100-F-19:1	4.8	0.29	0.051	1.3	0.065	0.012
1607-F2	3.1	0.17	0.019	2	0.1	0.011
116-F-4	2.9	0.74	0.38	1.7	0.41	0.22
100-F-23	2.5	0.12	0.021	0.37	0.00015	0
1607-F6	2.4	0.6	0.45	0.93	0.25	0.2
100-F-2	2.2	0.42	0.072	0.71	0.14	0.024
100-F-24	2	0.2	0.033	0.31	0.045	0.008
100-F-25	1.2	0.15	0.041	0.82	0.069	0.017
100-F-26:1	1.1	0.22	0.036	0.54	0.1	0.017
116-F-5	0.84	0.13	0.023	0.4	0.058	0.0098
600-107	0.25	0.049	0.0088	0.21	0.043	0.0076
600-23	0.18	0.13	0.11	0.12	0.08	0.069
100-F-11	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-12	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-14	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-15	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-16	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-18	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-26:2	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-26:5	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-26:7	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-37	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-38	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-7	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
100-F-9	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
116-F-3	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-128	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-131	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-132	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-181	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-190	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
600-204	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

Table 5-118. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Subsistence Farmer Scenario. (3 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
600-235	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]
628-1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-119. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Subsistence Farmer Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
100-F-37	16	6.4
100-F-9	7	3.2
116-F-1	5.4	1.7
600-23	5	1.3
600-235	4.6	1.2
600-190	4.3	1.7
100-F-7	3.9	1.7
100-F-26:1	3.3	1.1
100-F-26:7	3	1.3
600-132	2.9	1
600-131	2.8	1.1
100-F-14	2.7	1.2
600-181	2.7	1
100-F-18	2.6	1.1
100-F-38	2.6	0.9
628-1	2.5	0.99
600-204	2.4	0.93
116-F-14	2.3	0.76
100-F-12	2.2	0.88
100-F-26:5	2.1	0.81
600-128	2	0.79
100-F-25	1.8	0.41

Table 5-119. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Subsistence Farmer Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
100-F-26:2	1.8	0.72
116-F-5	1.5	0.52
118-F-8:1	1.3	0.43
1607-F6	0.96	0.42
100-F-19:2	0.25	0.077
116-F-10	0.2	0.066
116-F-4	0.2	0.1
116-F-2	0.045	0.024
116-F-3	0.021	0.011
100-F-19:1	0.019	0.0091
100-F-16	0.015	0.0082
116-F-6	0.015	0.0081
100-F-15	0.014	0.0073
100-F-11	0.0011	0.00075
100-F-2	-- [b]	-- [b]
100-F-23	-- [b]	-- [b]
100-F-24	-- [b]	-- [b]
100-F-35	-- [b]	-- [b]
116-F-9	-- [b]	-- [b]
1607-F2	-- [b]	-- [b]
600-107	-- [b]	-- [b]
UPR-100-F-2	-- [b]	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] Hazard indices pertain to the child receptor.

[b] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-120. Total Cancer Risks for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
100-F-37	4E-02	4E-02	4E-02
116-F-1	2E-02	2E-02	2E-02
116-F-14	1E-02	7E-03	7E-03
600-235	1E-02	1E-02	1E-02
100-F-26:1	8E-03	8E-03	8E-03
600-131	8E-03	8E-03	8E-03
600-181	8E-03	8E-03	8E-03
628-1	8E-03	8E-03	8E-03
600-204	7E-03	7E-03	7E-03
600-23	7E-03	7E-03	7E-03
100-F-12	6E-03	6E-03	6E-03
100-F-26:7	6E-03	6E-03	6E-03
100-F-38	6E-03	6E-03	6E-03
100-F-7	6E-03	6E-03	6E-03
100-F-9	6E-03	6E-03	6E-03
600-128	6E-03	6E-03	6E-03
600-132	6E-03	6E-03	6E-03
600-190	6E-03	6E-03	6E-03
100-F-14	5E-03	5E-03	5E-03
100-F-26:2	5E-03	5E-03	5E-03
100-F-26:5	5E-03	5E-03	5E-03
116-F-5	5E-03	5E-03	5E-03
100-F-18	4E-03	4E-03	4E-03
116-F-9	4E-03	6E-04	1E-04
116-F-6	2E-03	4E-04	6E-05
100-F-19:1	1E-03	3E-05	5E-06
100-F-19:2	9E-04	7E-05	3E-05
100-F-23	8E-04	1E-05	2E-06
100-F-35	7E-04	1E-04	2E-05
116-F-2	6E-04	2E-05	2E-06
118-F-8:1	6E-04	1E-04	5E-05
UPR-100-F-2	6E-04	3E-05	3E-06
100-F-24	5E-04	2E-05	3E-06
116-F-10	5E-04	8E-05	3E-05
1607-F6	5E-04	6E-05	5E-05
116-F-4	3E-04	6E-05	2E-05
100-F-2	2E-04	4E-05	7E-06
1607-F2	2E-04	1E-05	1E-06
100-F-25	9E-05	1E-05	4E-06

Table 5-120. Total Cancer Risks for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
600-107	2E-05	3E-06	7E-07
100-F-15	7E-08	7E-08	7E-08
100-F-16	7E-08	7E-08	7E-08
116-F-3	7E-08	7E-08	7E-08
100-F-11	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-121. Total Radiation Dose (mrem/yr) for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
116-F-9	86	14	2.3
116-F-14	54	2.9	0.46
116-F-6	48	8.6	1.4
100-F-19:1	21	0.64	0.11
100-F-35	16	3	0.5
100-F-19:2	15	1.4	0.61
116-F-1	14	0.24	0.03
100-F-23	12	0.3	0.05
118-F-8:1	11	1.8	0.62
116-F-2	10	0.32	0.034
UPR-100-F-2	9.9	0.46	0.045
116-F-10	8.4	1.5	0.57
100-F-24	7.5	0.44	0.074
1607-F6	7.2	0.74	0.47
116-F-4	5.7	1.3	0.47
100-F-2	4.5	0.86	0.15
1607-F2	3.5	0.19	0.022
100-F-26:1	2.8	0.52	0.088
100-F-25	1.7	0.25	0.061
116-F-5	0.94	0.15	0.026
600-107	0.28	0.055	0.01
600-23	0.18	0.13	0.11
100-F-11	-- [a]	-- [a]	-- [a]
100-F-12	-- [a]	-- [a]	-- [a]
100-F-14	-- [a]	-- [a]	-- [a]

Table 5-121. Total Radiation Dose (mrem/yr) for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
100-F-15	-- [a]	-- [a]	-- [a]
100-F-16	-- [a]	-- [a]	-- [a]
100-F-18	-- [a]	-- [a]	-- [a]
100-F-26:2	-- [a]	-- [a]	-- [a]
100-F-26:5	-- [a]	-- [a]	-- [a]
100-F-26:7	-- [a]	-- [a]	-- [a]
100-F-37	-- [a]	-- [a]	-- [a]
100-F-38	-- [a]	-- [a]	-- [a]
100-F-7	-- [a]	-- [a]	-- [a]
100-F-9	-- [a]	-- [a]	-- [a]
116-F-3	-- [a]	-- [a]	-- [a]
600-128	-- [a]	-- [a]	-- [a]
600-131	-- [a]	-- [a]	-- [a]
600-132	-- [a]	-- [a]	-- [a]
600-181	-- [a]	-- [a]	-- [a]
600-190	-- [a]	-- [a]	-- [a]
600-204	-- [a]	-- [a]	-- [a]
600-235	-- [a]	-- [a]	-- [a]
628-1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-122. Hazard Indices for 100-F/IU2/IU6 Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. [a] (2 Pages)

Waste Site	Present Day
100-F-37	180
116-F-1	63
600-235	53
100-F-9	49
100-F-26:1	36
600-23	36
100-F-7	34
600-131	32
600-181	31
600-190	31
600-132	30

Table 5-122. Hazard Indices for 100-F/IU2/IU6 Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. [a] (2 Pages)

Waste Site	Present Day
628-1	30
100-F-26:7	28
600-204	28
100-F-38	27
100-F-12	26
116-F-14	26
100-F-14	24
100-F-26:5	24
600-128	24
100-F-18	22
100-F-26:2	21
116-F-5	18
100-F-25	8.6
118-F-8:1	4.2
1607-F6	2
100-F-19:2	0.57
116-F-4	0.45
116-F-10	0.4
116-F-2	0.04
116-F-3	0.019
100-F-19:1	0.017
100-F-16	0.014
116-F-6	0.014
100-F-15	0.012
100-F-11	0.0011
100-F-2	-- [b]
100-F-23	-- [b]
100-F-24	-- [b]
100-F-35	-- [b]
116-F-9	-- [b]
1607-F2	-- [b]
600-107	-- [b]
UPR-100-F-2	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] Hazard indices pertain to the child receptor.

[b] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-123. Total Cancer Risks for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Yakama Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
100-F-37	4E-02	4E-02	4E-02
116-F-1	2E-02	2E-02	2E-02
116-F-14	1E-02	7E-03	7E-03
600-235	1E-02	1E-02	1E-02
100-F-26:1	8E-03	8E-03	8E-03
600-131	8E-03	8E-03	8E-03
600-181	7E-03	7E-03	7E-03
600-204	7E-03	7E-03	7E-03
600-23	7E-03	7E-03	7E-03
628-1	7E-03	7E-03	7E-03
100-F-12	6E-03	6E-03	6E-03
100-F-26:7	6E-03	6E-03	6E-03
100-F-38	6E-03	6E-03	6E-03
100-F-7	6E-03	6E-03	6E-03
100-F-9	6E-03	6E-03	6E-03
600-132	6E-03	6E-03	6E-03
600-190	6E-03	6E-03	6E-03
100-F-14	5E-03	5E-03	5E-03
100-F-26:2	5E-03	5E-03	5E-03
100-F-26:5	5E-03	5E-03	5E-03
116-F-5	5E-03	4E-03	4E-03
116-F-9	5E-03	8E-04	1E-04
600-128	5E-03	5E-03	5E-03
100-F-18	4E-03	4E-03	4E-03
116-F-6	3E-03	5E-04	8E-05
100-F-19:1	1E-03	4E-05	7E-06
100-F-19:2	9E-04	8E-05	3E-05
100-F-35	9E-04	2E-04	3E-05
100-F-23	8E-04	2E-05	3E-06
118-F-8:1	7E-04	1E-04	5E-05
116-F-10	6E-04	1E-04	3E-05
116-F-2	6E-04	2E-05	3E-06
100-F-24	5E-04	3E-05	4E-06
1607-F6	5E-04	9E-05	8E-05
UPR-100-F-2	5E-04	3E-05	3E-06
100-F-2	3E-04	5E-05	9E-06
116-F-4	3E-04	7E-05	2E-05
1607-F2	2E-04	1E-05	2E-06
100-F-25	1E-04	2E-05	6E-06
600-107	2E-05	4E-06	8E-07

Table 5-123. Total Cancer Risks for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Yakama Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
116-F-3	7E-08	7E-08	7E-08
100-F-15	6E-08	6E-08	6E-08
100-F-16	6E-08	6E-08	6E-08
100-F-11	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-124. Total Radiation Dose (mrem/yr) for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Yakama Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
116-F-9	100	17	2.8
116-F-6	59	11	1.8
116-F-14	55	3.4	0.58
100-F-19:1	21	0.8	0.14
100-F-35	20	3.7	0.62
100-F-19:2	15	1.6	0.71
116-F-1	14	0.27	0.035
118-F-8:1	13	2.2	0.71
100-F-23	11	0.37	0.063
116-F-2	10	0.35	0.04
UPR-100-F-2	10	0.5	0.053
116-F-10	9.3	1.7	0.64
100-F-24	7.7	0.54	0.092
1607-F6	7.2	0.86	0.53
116-F-4	6.9	1.5	0.54
100-F-2	5.6	1.1	0.18
1607-F2	3.6	0.21	0.025
100-F-26:1	3.5	0.65	0.11
100-F-25	2	0.31	0.081
116-F-5	1.1	0.18	0.031
600-107	0.33	0.066	0.012
600-23	0.21	0.14	0.13
100-F-11	-- [a]	-- [a]	-- [a]
100-F-12	-- [a]	-- [a]	-- [a]
100-F-14	-- [a]	-- [a]	-- [a]
100-F-15	-- [a]	-- [a]	-- [a]
100-F-16	-- [a]	-- [a]	-- [a]

Table 5-124. Total Radiation Dose (mrem/yr) for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Yakama Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
100-F-18	-- [a]	-- [a]	-- [a]
100-F-26:2	-- [a]	-- [a]	-- [a]
100-F-26:5	-- [a]	-- [a]	-- [a]
100-F-26:7	-- [a]	-- [a]	-- [a]
100-F-37	-- [a]	-- [a]	-- [a]
100-F-38	-- [a]	-- [a]	-- [a]
100-F-7	-- [a]	-- [a]	-- [a]
100-F-9	-- [a]	-- [a]	-- [a]
116-F-3	-- [a]	-- [a]	-- [a]
600-128	-- [a]	-- [a]	-- [a]
600-131	-- [a]	-- [a]	-- [a]
600-132	-- [a]	-- [a]	-- [a]
600-181	-- [a]	-- [a]	-- [a]
600-190	-- [a]	-- [a]	-- [a]
600-204	-- [a]	-- [a]	-- [a]
600-235	-- [a]	-- [a]	-- [a]
628-1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-125. Hazard Indices for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Yakama Scenario. [a] (2 Pages)

Waste Site	Present Day
100-F-37	110
100-F-9	44
116-F-1	35
600-235	30
100-F-7	25
600-23	24
100-F-26:1	21
600-190	20
100-F-26:7	19
600-131	18
100-F-14	17
600-132	17
600-181	17

Table 5-125. Hazard Indices for the 100-F/100-IU-2/100-IU-6 Area Remediated Waste Sites for the Yakama Scenario. [a] (2 Pages)

Waste Site	Present Day
628-1	17
100-F-18	16
100-F-38	15
116-F-14	15
600-204	15
100-F-12	14
100-F-26:5	13
600-128	13
100-F-26:2	12
100-F-25	11
116-F-5	10
118-F-8:1	4.9
1607-F6	2.5
100-F-19:2	0.48
116-F-4	0.42
116-F-10	0.35
116-F-2	0.13
116-F-3	0.062
100-F-19:1	0.056
100-F-16	0.045
116-F-6	0.045
100-F-15	0.041
100-F-11	0.0024
100-F-2	-- [b]
100-F-23	-- [b]
100-F-24	-- [b]
100-F-35	-- [b]
116-F-9	-- [b]
1607-F2	-- [b]
600-107	-- [b]
UPR-100-F-2	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] Hazard indices pertain to the child receptor.

[b] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-126. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for 300 Area Remediated Waste Sites for the Industrial/Commercial Scenario.

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
316-1	1E-04	2E-05	2E-05	2E-05	4E-06	4E-06
316-2	1E-04	7E-05	6E-05	1E-05	9E-06	8E-06
316-5	1E-04	1E-04	9E-05	2E-05	1E-05	1E-05
300-50	2E-05	1E-05	1E-05	2E-06	2E-06	1E-06
618-12	2E-05	1E-05	1E-05	2E-06	2E-06	2E-06
300-10	8E-06	5E-06	5E-06	1E-06	8E-07	7E-07
300-49	5E-06	3E-06	3E-06	9E-07	4E-07	3E-07
618-4	4E-06	4E-06	4E-06	5E-07	5E-07	5E-07
628-4	3E-06	3E-06	3E-06	4E-07	4E-07	4E-07
300-45	2E-06	1E-06	1E-06	5E-07	3E-07	3E-07
600-47	2E-06	2E-06	2E-06	3E-07	3E-07	3E-07
618-5	2E-06	2E-06	2E-06	4E-07	3E-07	3E-07
300-18	1E-06	1E-06	1E-06	1E-07	1E-07	1E-07
600-259	1E-06	2E-07	4E-08	3E-07	5E-08	1E-08
300-8	8E-07	8E-07	8E-07	2E-07	2E-07	2E-07
300 VTS	4E-07	9E-08	2E-08	1E-07	2E-08	5E-09
JA Jones 1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-127. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for 300 Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
316-1	7.4	0.98	0.91	3.3	0.69	0.64
316-5	7.2	5.5	5	3.7	2.9	2.6
316-2	4.9	3.4	3.2	2.3	1.7	1.7
300-50	0.71	0.65	0.61	0.33	0.28	0.26
618-12	0.68	0.57	0.55	0.35	0.31	0.3
300-10	0.2	0.083	0.061	0.1	0.057	0.046
300-49	0.2	0.098	0.075	0.16	0.065	0.044
618-4	0.15	0.15	0.14	0.079	0.076	0.073
300-45	0.1	0.059	0.054	0.098	0.056	0.051
600-47	0.086	0.083	0.079	0.047	0.045	0.043
618-5	0.063	0.06	0.058	0.041	0.04	0.038

Table 5-127. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for 300 Area Remediated Waste Sites for the Industrial/Commercial Scenario. (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
628-4	0.061	0.059	0.056	0.049	0.047	0.045
600-259	0.053	0.011	0.0019	0.053	0.011	0.0019
300-8	0.044	0.042	0.04	0.034	0.032	0.031
300 VTS	0.023	0.0045	0.00085	0.023	0.0045	0.00082
300-18	0.021	0.02	0.019	0.015	0.014	0.014
JA Jones 1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-128. Present-Day Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for 300 Area Remediated Waste Sites for the Industrial/Commercial Scenario.

Waste Site	RME Hazard Indices	CTE Hazard Indices
316-5	0.21	0.06
316-1	0.19	0.075
316-2	0.18	0.055
628-4	0.06	0.023
300-50	0.049	0.013
618-12	0.048	0.016
300-10	0.027	0.013
618-4	0.013	0.0046
300-49	0.011	0.0041
618-5	0.01	0.0046
600-47	0.008	0.003
300-18	0.0048	0.0021
300-45	0.003	0.0016
300-8	0.0021	0.00094
JA Jones 1	0.00012	0.0001
300 VTS	-- [a]	-- [a]
600-259	-- [a]	-- [a]

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-129. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for 300 Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a]

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	2E-05	2E-06	1E-06	4E-06	3E-07	1E-07
316-1	3E-04	4E-05	4E-05	3E-05	7E-06	6E-06
316-2	2E-04	1E-04	1E-04	2E-05	1E-05	1E-05
316-5	2E-04	2E-04	2E-04	3E-05	2E-05	2E-05
300-50	3E-05	2E-05	2E-05	3E-06	3E-06	2E-06
618-12	3E-05	2E-05	2E-05	3E-06	3E-06	3E-06
300-10	1E-05	9E-06	8E-06	2E-06	1E-06	1E-06
300-49	8E-06	5E-06	4E-06	2E-06	7E-07	6E-07
618-4	6E-06	6E-06	6E-06	8E-07	8E-07	8E-07
628-4	5E-06	5E-06	5E-06	7E-07	7E-07	7E-07
600-47	4E-06	4E-06	4E-06	5E-07	5E-07	5E-07
618-5	4E-06	4E-06	4E-06	6E-07	6E-07	6E-07
300-45	3E-06	2E-06	2E-06	8E-07	5E-07	4E-07
300-18	2E-06	2E-06	2E-06	2E-07	2E-07	2E-07
600-259	2E-06	4E-07	7E-08	4E-07	9E-08	2E-08
300-8	1E-06	1E-06	1E-06	3E-07	3E-07	3E-07
300 VTS	8E-07	2E-07	4E-08	2E-07	4E-08	9E-09
JA Jones 1	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-130. Total Reasonable Maximum Exposure Radiation Dose (mrem/yr) for 300 Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
Broad-area component [b]	0.80	0.047	0.013	0.78	0.042	0.010
316-1	13	1.7	1.6	5.5	1.1	1.1
316-5	12	9.4	8.6	6.2	4.7	4.3
316-2	8.5	5.8	5.5	3.7	2.9	2.8
300-50	1.2	1.1	1.1	0.55	0.47	0.44
618-12	1.2	0.99	0.95	0.58	0.52	0.49
300-10	0.35	0.14	0.1	0.17	0.096	0.078

Table 5-130. Total Reasonable Maximum Exposure Radiation Dose (mrem/yr) for 300 Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
300-49	0.34	0.17	0.13	0.27	0.11	0.074
618-4	0.27	0.25	0.24	0.13	0.13	0.12
300-45	0.17	0.1	0.093	0.16	0.094	0.086
600-47	0.15	0.14	0.14	0.078	0.075	0.072
618-5	0.11	0.1	0.1	0.069	0.066	0.063
628-4	0.11	0.1	0.097	0.081	0.078	0.075
600-259	0.093	0.019	0.0037	0.089	0.018	0.0035
300-8	0.076	0.073	0.07	0.056	0.054	0.052
300 VTS	0.04	0.0082	0.0018	0.038	0.0079	0.0017
300-18	0.036	0.034	0.033	0.025	0.024	0.023
JA Jones 1	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-131. Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for 300 Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
	Present Day	Present Day
Broad-area component [b]	0.025	0.0079
316-1	0.32	0.14
316-5	0.3	0.091
316-2	0.27	0.089
628-4	0.11	0.049
300-50	0.077	0.023
618-12	0.073	0.026
300-10	0.044	0.023
618-4	0.022	0.0087
300-49	0.018	0.0081
618-5	0.017	0.009
600-47	0.014	0.0064
300-18	0.0092	0.005

Table 5-131. Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for 300 Area Remediated Waste Sites for the Resident National Monument/Refuge Scenario. [a] (2 Pages)

Waste Site	RME Hazard Indices	CTE Hazard Indices
	Present Day	Present Day
300-45	0.0062	0.0039
300-8	0.0049	0.003
JA Jones 1	0.0019	0.0018
300 VTS	-- [c]	-- [c]
600-259	-- [c]	-- [c]

NOTE: Tabulated risks do not incorporate exposure to groundwater.

[a] Individual remediated waste site risks are tabulated for the residential (local-area) component of the scenario that is specific to each remediated waste site.

[b] These results pertain to the occupational (broad-area) component of exposure for the Resident National Monument/Refuge scenario. These values are additive to the local-area results for individual remediated waste sites.

[c] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-132. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for 300 Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
316-1	3E-03	2E-03	2E-03	3E-04	2E-04	2E-04
300-10	2E-03	2E-03	2E-03	3E-04	3E-04	3E-04
316-2	2E-03	2E-03	2E-03	2E-04	2E-04	2E-04
316-5	2E-03	1E-03	1E-03	2E-04	2E-04	1E-04
618-12	2E-03	2E-03	2E-03	2E-04	2E-04	2E-04
300-50	1E-03	1E-03	1E-03	1E-04	1E-04	1E-04
300-49	7E-04	7E-04	7E-04	7E-05	6E-05	6E-05
618-5	7E-04	7E-04	7E-04	8E-05	8E-05	8E-05
628-4	7E-04	7E-04	7E-04	7E-05	7E-05	7E-05
618-4	5E-04	5E-04	5E-04	6E-05	6E-05	6E-05
600-47	4E-04	4E-04	4E-04	4E-05	4E-05	4E-05
300-18	3E-04	3E-04	3E-04	4E-05	4E-05	4E-05
300-45	2E-05	1E-05	1E-05	3E-06	2E-06	2E-06
300-8	9E-06	8E-06	8E-06	1E-06	1E-06	1E-06
600-259	5E-06	9E-07	2E-07	1E-06	2E-07	5E-08

Table 5-132. Total Reasonable Maximum Exposure and Central Tendency Exposure Cancer Risks for 300 Area Remediated Waste Sites for the Subsistence Farmer Scenario. (2 Pages)

Waste Site	RME Cancer Risks			CTE Cancer Risks		
	Present Day	2075	2150	Present Day	2075	2150
300 VTS	2E-06	4E-07	9E-08	5E-07	1E-07	2E-08
JA Jones 1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-133. Total Reasonable Maximum Exposure and Central Tendency Exposure Radiation Dose (mrem/yr) for 300 Area Remediated Waste Sites for the Subsistence Farmer Scenario.

Waste Site	RME Radiation Dose			CTE Radiation Dose		
	Present Day	2075	2150	Present Day	2075	2150
316-5	81	73	69	29	25	24
316-2	51	45	43	17	16	15
316-1	33	13	12	14	6	5.7
618-12	9.5	8.8	8.5	3.3	3.1	3
300-50	9.1	8.6	8.2	2.7	2.5	2.4
618-4	2.3	2.2	2.1	0.75	0.72	0.69
300-10	1.5	1	0.92	0.67	0.51	0.46
300-49	1.5	1.1	0.98	0.78	0.45	0.37
600-47	1.1	1.1	1	0.46	0.45	0.43
300-45	1	0.86	0.81	0.66	0.52	0.49
628-4	0.83	0.8	0.77	0.43	0.41	0.39
618-5	0.79	0.76	0.73	0.38	0.36	0.35
300-8	0.61	0.58	0.56	0.31	0.29	0.28
300-18	0.35	0.34	0.32	0.14	0.14	0.13
600-259	0.2	0.04	0.0072	0.17	0.035	0.0062
300 VTS	0.086	0.017	0.0031	0.074	0.015	0.0027
JA Jones 1	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-134. Reasonable Maximum Exposure and Central Tendency Exposure Hazard Indices for 300 Area Remediated Waste Sites for the Subsistence Farmer Scenario. [a]

Waste Site	RME Hazard Indices	CTE Hazard Indices
	Present Day	Present Day
316-1	77	23
316-5	27	8.2
316-2	25	7.8
300-10	12	4.6
300-50	12	3.3
618-12	12	3.8
628-4	6.7	2.4
300-49	5.4	1.8
618-5	3.9	1.5
618-4	3.6	1.2
600-47	2.4	0.8
300-18	2	0.68
300-45	0.35	0.19
300-8	0.24	0.11
JA Jones 1	0.0014	0.00076
300 VTS	-- [b]	-- [b]
600-259	-- [b]	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] Hazard indices pertain to the child receptor.
[b] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable
CTE = central tendency exposure
RME = reasonable maximum exposure

Table 5-135. Total Cancer Risks for 300 Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
300-10	3E-02	3E-02	3E-02
316-1	3E-02	3E-02	3E-02
300-50	2E-02	2E-02	2E-02
316-2	2E-02	2E-02	2E-02
618-12	2E-02	2E-02	2E-02
300-49	1E-02	1E-02	1E-02
618-5	1E-02	1E-02	1E-02
628-4	1E-02	1E-02	1E-02
316-5	9E-03	9E-03	9E-03
618-4	8E-03	8E-03	8E-03

Table 5-135. Total Cancer Risks for 300 Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
300-18	6E-03	6E-03	6E-03
600-47	6E-03	6E-03	6E-03
300-45	5E-05	4E-05	4E-05
300-8	3E-05	3E-05	2E-05
600-259	1E-05	3E-06	5E-07
300 VTS	6E-06	1E-06	3E-07
JA Jones 1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-136. Total Radiation Dose (mrem/yr) for 300 Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario.

Waste Site	Present Day	2075	2150
316-5	82	73	68
316-2	52	45	43
316-1	37	13	12
618-12	9.4	8.8	8.4
300-50	9.1	8.6	8.2
618-4	2.3	2.2	2.1
300-10	1.6	1	0.91
300-49	1.5	1.1	0.98
600-47	1.1	1.1	1
300-45	1	0.85	0.8
628-4	0.83	0.8	0.77
618-5	0.79	0.76	0.73
300-8	0.61	0.58	0.56
300-18	0.35	0.34	0.32
600-259	0.22	0.045	0.0081
300 VTS	0.096	0.019	0.0036
JA Jones 1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-137. Hazard Indices for 300 Area Remediated Waste Sites for the Confederated Tribes of the Umatilla Indian Reservation Scenario. [a]

Waste Site	Present Day
316-1	430
300-10	130
316-2	110
618-12	100
300-50	81
316-5	74
300-49	49
628-4	45
618-5	43
618-4	33
600-47	24
300-18	22
300-45	0.7
300-8	0.48
JA Jones 1	0.0013
300 VTS	-- [b]
600-259	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.
[a] Hazard indices pertain to the child receptor.
[b] No contaminants of potential concern were identified for the health assessment endpoint.
-- = not applicable

Table 5-138. Total Cancer Risks for 300 Area Remediated Waste Sites for the Yakama Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
316-1	4E-02	3E-02	3E-02
300-10	3E-02	3E-02	3E-02
300-50	2E-02	2E-02	2E-02
316-2	2E-02	2E-02	2E-02
618-12	2E-02	2E-02	2E-02
300-49	1E-02	1E-02	1E-02
316-5	1E-02	9E-03	9E-03
618-5	1E-02	1E-02	1E-02
628-4	1E-02	1E-02	1E-02
618-4	8E-03	8E-03	8E-03
300-18	6E-03	6E-03	5E-03
600-47	6E-03	6E-03	6E-03
300-45	5E-05	4E-05	4E-05
300-8	3E-05	3E-05	3E-05

Table 5-138. Total Cancer Risks for 300 Area Remediated Waste Sites for the Yakama Scenario. (2 Pages)

Waste Site	Present Day	2075	2150
600-259	2E-05	3E-06	7E-07
300 VTS	7E-06	1E-06	3E-07
JA Jones 1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-139. Total Radiation Dose (mrem/yr) for 300 Area Remediated Waste Sites for the Yakama Scenario.

Waste Site	Present Day	2075	2150
316-5	91	81	76
316-2	57	49	47
316-1	39	15	14
300-50	10	9.5	9.1
618-12	10	9.7	9.3
618-4	2.5	2.4	2.3
300-10	1.8	1.2	1
300-49	1.7	1.2	1.1
600-47	1.3	1.2	1.2
300-45	1.1	0.95	0.89
628-4	0.92	0.88	0.85
618-5	0.87	0.84	0.8
300-8	0.67	0.64	0.62
300-18	0.39	0.37	0.36
600-259	0.27	0.053	0.0096
300 VTS	0.11	0.023	0.0043
JA Jones 1	-- [a]	-- [a]	-- [a]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-140. Hazard Indices for 300 Area Remediated Waste Sites for the Yakama Scenario. [a]

Waste Site	Present Day
316-1	370
316-2	77
300-10	75
618-12	58
316-5	57
300-50	51
628-4	31
300-49	30
618-5	24
618-4	19
600-47	13
300-18	12
300-45	0.62
300-8	0.42
JA Jones 1	0.0032
300 VTS	-- [b]
600-259	-- [b]

NOTE: Tabulated risks do not incorporate exposure to groundwater or fish ingestion.

[a] Hazard indices pertain to the child receptor.

[b] No contaminants of potential concern were identified for the health assessment endpoint.

-- = not applicable

Table 5-141. Summary of Key Uncertainties for the Local-Area Risk Assessment. (2 Pages)

Risk Assessment Activity	Description of Uncertainty Discussed in the Text	Potential Bias
Data Collection and Evaluation	Analytical data quality for historical CVP and RSVP soil data assumed has not been documented for use in a baseline risk assessment	Underestimate or overestimate
	Bias in the risk assessment results based on small numbers of detected sample results when there are U-qualified analytical results above PQL values defined in the SAP	Underestimate
	Adequacy of detection limits for analytes where a PQL was not established for the human health risk assessment	Underestimate
	Representativeness of waste site soil verification data for average soil constituent concentrations	Overestimate
	Representativeness of reference sites for background concentrations of COPCs	Slight overestimate

Table 5-141. Summary of Key Uncertainties for the Local-Area Risk Assessment. (2 Pages)

Risk Assessment Activity	Description of Uncertainty Discussed in the Text	Potential Bias
	Bias in the risk assessment results based on small numbers of detected sample results when there are numerous nondetect data points	Slight overestimate
	Selection of statistical method for computing the RME representative concentration	Underestimate or overestimate
	Variability between focused (discrete) and statistical (composite) sample types in the cleanup verification data at remediated waste sites	Slight overestimate
Exposure Assessment	Applicability of any specific exposure scenario to future conditions	Unknown
	Identification of COPCs to calculate Hanford-related risks	Slight underestimate
	Average COPC concentrations in sampled media	Quantified via RME and CTE
	Values for behavioral variables	Quantified via RME and CTE
	Use of as-sampled data to represent surface soil exposure at backfilled excavated waste sites	Overestimate
	Modeled exposure concentrations of metals in produce and livestock tissues from soil data when remediated waste site soil concentrations are much higher than background levels	Overestimate
	No modeling of exposure to lead via foodstuffs in the Residential scenarios	Underestimate lead exposure
	Use of modeled instead of measured COPC concentrations in upland and riparian plants	Underestimate or overestimate
	No integration of contaminated irrigation water in the agricultural exposure pathways	Underestimate
Toxicity Assessment	Intentional bias in chemical CSFs and reference doses	Overestimate
	High-dose to low-dose extrapolation for cancer risk	Overestimate
	Application of 30-year integrated dose conversion factors to estimate dose for shorter exposure durations	Overestimate
	Use of no-threshold dose-response model for CSFs of nonmutagenic carcinogens	Overestimate
	Additivity of cancer risk estimates for radionuclides and chemicals	Possible overestimate
	Adjustment of CSFs for childhood exposure to PAH	Possible overestimate
	Summation of hazard quotients across chemicals to estimate a hazard index	Variable; generally overestimate

COPC = contaminant of potential concern
CSF = cancer slope factor
CTE = central tendency exposure
CVP = cleanup verification package
PAH = polycyclic aromatic hydrocarbon
PQL = practical quantitation limit
RME = reasonable maximum exposure
RSVP = remaining sites verification package
SAP = sampling and analysis plan

Table 5-142. Comparison of Plant-Soil Ratios for Metals (mg/kg Dry Plant per mg/kg Dry Soil).

Analyte	RCBRA Upland [a]	RESRAD	Baes et al. 1984 (Br)	Baes et al. 1984 (Br Regression) [b]	Baes et al. 1984 (Bv)	BJC/OR-133 Median	BJC/OR-133 Regression [c]	EPA/530-R-05-006	USACHPPM 2004 Fruit	USACHPPM 2004 Root	USACHPPM 2004 Leaf	IAEA 1994	PNNL-13421	Maximum/ Minimum Ratio
Aluminum	NA	0.027	0.00065	NA	0.004	0.00287	NA	NA	NA	NA	NA	NA	NA	41
Antimony	NA	0.067	0.03	NA	0.2	0.0102	NA	0.0319	NA	NA	0.03729	0.00056	0.00008	2,500
Arsenic	1.10	0.53	0.006	NA	0.04	0.0375	0.06	0.00633	NA	1.125	0.0791	NA	0.006	188
Barium	0.61	0.033	0.015	NA	0.15	0.156	NA	0.0322	NA	NA	0.1027	0.03	0.015	40
Beryllium	NA	0.027	0.0015	NA	0.01	NA	NA	0.00258	NA	NA	NA	NA	0.0015	18
Boron	41.7	2.0	2.0	6.8	4.0	NA	NA	NA	NA	1.4413	5.7143	NA	NA	29
Cadmium	NA	2.0	0.15	NA	0.55	0.586	0.642	0.125	0.1283	0.4444	0.3538	NA	0.15	16
Cesium	NA	0.04	0.03	NA	0.08	NA	NA	NA	NA	NA	NA	0.005 - 0.53	0.22	100
Chromium	0.379	0.0017	0.0045	NA	0.0075	0.041	NA	0.00488	NA	NA	0.105	0.001	0.0045	379
Cobalt	NA	0.53	0.007	NA	0.02	0.00745	NA	NA	NA	NA	0.5382	0.0037 - 0.29	0.007	77
Copper	1.25	0.87	0.25	0.23	0.4	0.124	0.30	NA	0.0453	0.2136	0.2745	0.8	0.25	28
Fluoride	NA	0.13	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.006	22
Europium	NA	0.0025	0.004	NA	0.01	NA	NA	NA	NA	NA	NA	NA	0.02	8
Iron	NA	0.0067	0.001	0.0012	0.004	0.00425	NA	NA	NA	NA	NA	0.004	0.05	50
Lead	NA	0.0067	0.009	NA	0.045	0.0389	0.096	0.0136	0.05778	NA	0.05129	0.0013 - 0.02	0.01	14
Manganese	0.379	2.0	0.05	0.065	0.25	0.0792	NA	NA	NA	0.05275	0.32484	0.047 - 1.9	0.05	40
Mercury	NA	2.5	0.2	NA	0.9	0.652	NA	0.0145	NA	NA	0.75	NA	0.37	175
Nickel	NA	0.33	0.06	NA	0.06	0.018	0.051	0.00931	0.02444	NA	0.66667	0.03	0.06	72
Selenium	NA	0.67	0.025	NA	0.025	0.672	0.49	0.0195	0.08888	1.0439	0.58049	NA	0.05	54
Silver	NA	1.0	0.1	NA	0.4	0.014	NA	0.138	NA	NA	NA	0.00027 - 0.15	0.0008	1,250
Strontium	3.79	2.0	0.25	NA	2.5	NA	NA	NA	NA	NA	NA	0.02 - 3.0	0.2	19
Technetium	NA	5.0	1.5	NA	9.5	NA	NA	NA	NA	NA	NA	0.24 - 2600	1.5	10,800
Tin	NA	0.017	0.006	NA	0.03	NA	NA	NA	NA	NA	NA	NA	0.006	5
Uranium	NA	0.017	0.004	NA	0.0085	NA	NA	NA	0.00153	2.91667	0.0201	0.0013 - 0.014	0.004	1,906
Vanadium	NA	0.013	0.003	NA	0.0055	0.00485	NA	NA	NA	0.40506	0.05063	NA	NA	135
Zinc	1.70	2.7	0.9	0.66	1.5	0.366	0.74	0.097	0.06887	0.45652	0.33513	0.71 - 35	0.9	39

[a] Converted from fresh to dry weight using a moisture content of 73.6%; average reported moisture content of shoots of rabbitbrush and Russian thistle, and shoots and roots of cheatgrass, from RCBRA Volume I
[b] Values were calculated using the Hanford background 90th percentile value excepting boron, which was calculated using the maximum upland reference area value.
[c] Values were calculated using the Hanford background 90th percentile excepting cadmium (Yakima Basin Washington Department of Ecology value) and selenium (maximum upland reference area value).

NA = not available
RCBRA = *River Corridor Baseline Risk Assessment*
RESRAD = RESidual RADioactivity
USCHPPM = U.S. Army Center for Health Promotion and Preventative Medicine

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USCHPPM, 2004, *Development of Terrestrial Exposure and Bioaccumulation Information for the Army Risk Assessment Modeling System*, U.S. Army Center for Health Promotion and Preventative Medicine, Toxicology Directorate, Health Effects Research Program, Aberdeen Proving Ground, Maryland.

Table 5-143. Comparison of Measured and Modeled Exposure Point Concentrations for Upland Contaminants of Potential Concern.

Analyte	Central Tendency Exposure			Reasonable Maximum Exposure		
	Upland Soil	Plant-Measured	Plant-Modeled	Upland Soil	Plant-Measured	Plant-Modeled
Metals (mg/kg)						
Arsenic	3.7	0.78	0.30	4.2	0.92	0.34
Barium	91	9.0	0.45	101	11	0.51
Boron	3.6	25	1.1	4.8	33	1.5
Cadmium	0.18	0.14	0.055	0.23	0.14	0.068
Chromium	11	0.76	0.0027	11	1.1	0.0029
Copper	16	4.2	2.1	18	5.1	2.3
Lead	27	0.59	0.63	35	0.97	0.82
Silver	0.11	0.34	0.016	0.13	0.87	0.020
Strontium (elemental)	39	20	12	47	26	14
Tin	2.2	3.8	0.0056	3.3	6.1	0.0081
Radionuclides (pCi/g)						
Uranium-233/234	0.20	0.018	5.0E-04	0.22	0.025	5.6E-04
Uranium-238	0.20	0.0068	4.9E-04	0.23	0.010	5.7E-04
Pesticides (mg/kg)						
alpha-Chlordane	0.0044	0.21	1.7E-05	0.0061	0.25	2.4E-05
beta-1,2,3,4,5,6-Hexachlorocyclohexane	0.0010	0.025	3.7E-05	0.0014	0.035	5.0E-05
DDE	0.011	0.073	3.1E-05	0.020	0.13	5.9E-05
DDT	0.014	0.091	1.6E-05	0.032	0.18	3.7E-05
Dieldrin	0.0010	0.14	1.4E-05	0.0012	0.34	1.7E-05
Endosulfan I	6.1E-04	0.075	2.3E-05	7.8E-04	0.10	2.9E-05
Endosulfan II	0.0065	0.016	2.4E-04	0.0065	0.020	2.4E-04
Endosulfan sulfate	0.0014	0.043	5.9E-05	0.0036	0.11	1.5E-04
gamma-Chlordane	0.0010	0.018	3.9E-06	0.0012	0.024	4.8E-06
Methoxychlor	0.0016	0.029	1.6E-05	0.0019	0.036	1.9E-05

DDE = dichlorodiphenyldichloroethylene
DDT = dichlorodiphenyltrichloroethane

Table 6-1. Summary of Groundwater Data Used for 100-BC-5 Operable Unit Contaminant of Potential Concern Refinement. (3 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (µg/L)								
Aluminum	26	10	16	38	34.5	124	18.7	125
Antimony	43	1	42	2.3	50.2	50.2	3.2	45.9
Barium	43	42	1	98	10.5	56.1	10.8	10.8
Beryllium	43	11	32	26	0.46	0.88	0.22	4
Cadmium	43	0	43	0	--	--	0.24	4.2
Calcium	43	43	0	100	25,000	81,900	--	--
Chromium	43	40	3	93	3.2	122	4	4
Cobalt	43	5	38	12	4.7	7.9	1.6	8.2
Copper	43	11	32	26	4.4	27.7	1.4	8.2
Hexavalent chromium	20	20	0	100	8.8	64	--	--
Iron	43	41	2	95	9.2	632	9	9
Magnesium	43	43	0	100	7,380	14,100	--	--
Manganese	43	29	14	67	1.6	24	2.9	4
Nickel	43	8	35	19	1.7	11.9	1.3	37.5
Potassium	43	41	2	95	2,160	7,530	2,180	2,200
Silver	43	5	38	12	10.3	16.3	1.1	7
Sodium	43	43	0	100	9,360	18,500	--	--
Strontium (elemental)	43	43	0	100	139	353	--	--
Vanadium	43	36	7	84	7	48.7	7	12.6
Zinc	43	35	8	81	2.7	18.8	4	7.1
Organics (µg/L)								
1,1,1-Trichloroethane	9	0	9	0	--	--	0.13	0.23
1,1,2-Trichloroethane	9	0	9	0	--	--	0.1	0.31
1,1-Dichloroethane	9	0	9	0	--	--	0.13	0.2
1,1-Dichloroethene	1	0	1	0	--	--	0.15	0.15
1,2-Dichloroethane	9	0	9	0	--	--	0.12	0.17
1,4-Dichlorobenzene	9	0	9	0	--	--	0.14	0.18
1-Butanol	9	0	9	0	--	--	2.5	7
2-Butanone	9	0	9	0	--	--	0.42	0.89
Acetone	9	0	9	0	--	--	0.21	4

Table 6-1. Summary of Groundwater Data Used for 100-BC-5 Operable Unit Contaminant of Potential Concern Refinement. (3 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Benzene	9	0	9	0	--	--	0.12	0.23
Carbon tetrachloride	9	0	9	0	--	--	0.14	0.23
Chloroform	9	4	5	44	0.3	0.62	0.09	0.17
cis-1,2-Dichloroethylene	9	0	9	0	--	--	0.1	0.18
Ethyl cyanide	9	0	9	0	--	--	0.96	2.6
Methyl isobutyl ketone	9	0	9	0	--	--	0.15	1.3
Methylenechloride	9	5	4	56	0.2	3	0.37	0.76
Tetrachloroethene	9	0	9	0	--	--	0.11	0.57
Tetrahydrofuran	4	0	4	0	--	--	1.5	1.6
Toluene	9	0	9	0	--	--	0.08	0.33
trans-1,2-Dichloroethylene	9	0	9	0	--	--	0.05	0.26
Trichloroethene	9	7	2	78	1	2.1	0.16	0.4
Vinyl chloride	9	0	9	0	--	--	0.1	0.68
Xylenes (total)	9	0	9	0	--	--	0.14	0.79
Radionuclides (pCi/L)								
Antimony-125	2	0	2	0	--	--	-1.89	1.93
Beryllium-7	2	0	2	0	--	--	-12.8	31.6
Cesium-134	2	0	2	0	--	--	-1.98	-0.567
Cesium-137	2	0	2	0	--	--	0.221	3.06
Cobalt-60	2	0	2	0	--	--	-0.306	3.31
Europium-152	2	0	2	0	--	--	-7.24	3.07
Europium-154	2	0	2	0	--	--	4.14	6.96
Europium-155	2	0	2	0	--	--	-5.69	2.09
Gross alpha	131	35	96	27	1.03	9.6	-3.6	2.23
Gross beta	131	131	0	100	4.12	345	--	--
Iodine-129	2	0	2	0	--	--	-0.00128	0.0419
Potassium-40	2	0	2	0	--	--	-52	127
Ruthenium-106	2	0	2	0	--	--	-9.37	0
Strontium-90	143	97	46	68	0.425	170	-0.179	0.584
Technetium-99	18	12	6	67	5.9	110	-2.1	4.6
Tritium	186	163	23	88	240	161,000	-64.2	254

Table 6-1. Summary of Groundwater Data Used for 100-BC-5 Operable Unit Contaminant of Potential Concern Refinement. (3 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Anions (µg/L)								
Carbon disulfide	9	0	9	0	--	--	0.13	0.3
Chloride	168	168	0	100	1,140	43,300	--	--
Fluoride	165	165	0	100	39	510	--	--
Nitrogen in nitrate	168	168	0	100	160	11,204	--	--
Nitrogen in nitrite	165	2	163	1.2	84.9	280	1.0	34
Sulfate	168	168	0	100	9,800	82,800	--	--
Other								
Alkalinity	109	109	0	100	62,000	140,000	--	--
Dissolved oxygen	23	23	0	100	6010	9,160	--	--
Oxidation reduction potential	22	22	0	100	32.1 mV	227 mV	--	--
pH measurement	205	205	0	100	7.11	8.23	--	--
Specific conductance	227	227	0	100	153 µS/cm	623 µS/cm	--	--
Temperature	205	205	0	100	11.8 °C	26.5 °C	--	--
Turbidity	205	205	0	100	0.15 NTU	28.3 NTU	--	--

-- = not applicable
NTU = nephelometric turbity unit

Table 6-2. Summary of Groundwater Data Used for 100-KR-4 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (µg/L)								
Aluminum	204	133	71	65	20	4,650	10.1	95.8
Antimony	263	13	250	4.9	2.5	59.3	1.7	144
Arsenic	40	32	8	80	1.94	9.73	3.4	80
Barium	263	263	0	100	11.5	105	--	--
Beryllium	263	46	217	17	0.11	1.2	0.1	4
Bismuth	11	0	11	0	--	--	5.1	6.1
Boron	11	11	0	100	3.8	54.1	--	--
Cadmium	263	2	261	0.76	0.4	2.7	0.3	6
Calcium	289	289	0	100	20,400	2,090,000	--	--
Calculated total uranium	15	15	0	100	0.64	29.3	--	--
Chromium	290	278	12	96	1.9	1,310	2.7	800
Cobalt	263	20	243	7.6	0.68	20.2	0.5	14
Copper	263	75	188	29	0.82	18.3	0.5	14
Hexavalent chromium	282	242	40	86	0.076	487	0	22
Iron	301	271	30	90	10	15,300	0	54.5
Lead	62	21	41	34	0.059	7.5	0.1	40
Lithium	12	12	0	100	2.4	5.9	--	--
Magnesium	289	289	0	100	4270	29,800	--	--
Manganese	287	220	67	77	0.34	718	0.2	6
Mercury	25	1	24	4	0.12	0.12	0.046	0.1
Molybdenum	11	5	6	45	1.4	4.2	1.3	2.9
Nickel	263	109	154	41	1.3	288	1	15.8
Phosphorus	11	7	4	64	13.9	26.3	8.3	9
Potassium	289	282	7	98	1,440	13,400	1,950	3,100
Selenium	14	1	13	7.1	4.8	4.8	3.6	57.6
Silicon	11	11	0	100	6170	14,500	--	--
Silver	263	21	242	8	5.4	27.5	0.5	22
Sodium	289	289	0	100	2,400	47,800	--	--
Strontium (elemental)	256	256	0	100	90.4	611	--	--

Table 6-2. Summary of Groundwater Data Used for 100-KR-4 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Thallium	14	0	14	0	--	--	6.4	39.7
Tin	33	0	33	0	--	--	2.1	10.7
Uranium (inorganic)	54	44	10	81	2.11	22.6	20.6	20.6
Vanadium	263	206	57	78	0.63	32.6	0.9	28
Zinc	263	226	37	86	0.68	572	0.5	9.6
Organics (µg/L)								
1,1,1-Trichloroethane	20	0	20	0	--	--	0.035	1
1,1,2-Trichloroethane	20	0	20	0	--	--	0.05	1
1,1-Dichloroethane	20	0	20	0	--	--	0.046	1
1,1-Dichloroethene	6	0	6	0	--	--	0.04	1
1,2,4-Trichlorobenzene	11	0	11	0	--	--	10	10
1,2-Dichlorobenzene	11	0	11	0	--	--	10	10
1,2-Dichloroethane	20	0	20	0	--	--	0.08	1
1,3-Dichlorobenzene	11	0	11	0	--	--	10	10
1,4-Dichlorobenzene	31	1	30	3.2	0.3	0.3	0.047	10
1,4-Dioxane	5	0	5	0	--	--	2.6	13
1-Butanol	20	0	20	0	--	--	1.1	100
2,4,5-Trichlorophenol	11	0	11	0	--	--	25	26
2,4,6-Trichlorophenol	11	0	11	0	--	--	10	10
2,4-Dichlorophenol	11	0	11	0	--	--	10	10
2,4-Dimethylphenol	11	0	11	0	--	--	10	10
2,4-Dinitrophenol	11	0	11	0	--	--	25	26
2,4-Dinitrotoluene	11	0	11	0	--	--	10	10
2,6-Dinitrotoluene	11	0	11	0	--	--	10	10
2-Butanone	20	0	20	0	--	--	0.1	1.8
2-Chloronaphthalene	11	0	11	0	--	--	10	10
2-Chlorophenol	11	0	11	0	--	--	10	10
2-Methylnaphthalene	11	0	11	0	--	--	10	10
2-Methylphenol [cresol, o-]	11	0	11	0	--	--	10	10
2-Nitroaniline	11	0	11	0	--	--	25	26
2-Nitrophenol	11	0	11	0	--	--	10	10

Table 6-2. Summary of Groundwater Data Used for 100-KR-4 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
3,3*-Dichlorobenzidine	11	0	11	0	--	--	10	10
3+4 Methylphenol [cresol, m+p]	11	0	11	0	--	--	10	10
3-Nitroaniline	11	0	11	0	--	--	25	26
4,6-Dinitro-2-methylphenol	11	0	11	0	--	--	25	26
4-Bromophenylphenyl ether	11	0	11	0	--	--	10	10
4-Chloro-3-methylphenol	11	0	11	0	--	--	10	10
4-Chloroaniline	11	0	11	0	--	--	10	10
4-Chlorophenylphenyl ether	11	0	11	0	--	--	10	10
4-Nitroaniline	11	0	11	0	--	--	25	26
4-Nitrophenol	11	0	11	0	--	--	25	26
Acenaphthene	11	0	11	0	--	--	10	10
Acenaphthylene	11	0	11	0	--	--	10	10
Acetone	20	2	18	10	1.3	1.6	0.21	4
Aldrin	11	0	11	0	--	--	0.005	0.051
Alpha-BHC	11	0	11	0	--	--	0.005	0.051
alpha-Chlordane	11	0	11	0	--	--	0.005	0.051
Anthracene	11	0	11	0	--	--	10	10
Aroclor-1016	11	0	11	0	--	--	0.4	410
Aroclor-1221	11	0	11	0	--	--	0.4	410
Aroclor-1232	11	0	11	0	--	--	0.4	410
Aroclor-1242	11	0	11	0	--	--	0.4	410
Aroclor-1248	11	0	11	0	--	--	0.4	410
Aroclor-1254	11	0	11	0	--	--	0.4	410
Aroclor-1260	11	1	10	9.1	0.054	0.054	0.4	410
Benzene	20	0	20	0	--	--	0.05	1
Benzo[a]anthracene	11	0	11	0	--	--	10	10
Benzo[a]pyrene	11	0	11	0	--	--	10	10
Benzo[b]fluoranthene	11	0	11	0	--	--	10	10
Benzo[ghi]perylene	11	0	11	0	--	--	10	10
Benzo[k]fluoranthene	11	0	11	0	--	--	10	10
beta-1,2,3,4,5,6-Hexachlorocyclohexane	11	0	11	0	--	--	0.005	0.051

Table 6-2. Summary of Groundwater Data Used for 100-KR-4 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Bis[2-chloro-1-methylethyl]ether	11	0	11	0	--	--	10	10
Bis[2-Chloroethoxy]methane	11	0	11	0	--	--	10	10
Bis[2-chloroethyl] ether	11	0	11	0	--	--	10	10
Bis[2-ethylhexyl] phthalate	11	10	1	91	0.659	5	10	10
Butylbenzylphthalate	11	0	11	0	--	--	10	10
Carbazole	11	0	11	0	--	--	10	10
Carbon tetrachloride	20	1	19	5	1	1	0.039	1
Chlorobenzene	3	0	3	0	--	--	1	1
Chloroform	20	14	6	70	0.18	2	0.09	1
Chrysene	11	0	11	0	--	--	10	10
cis-1,2-Dichloroethylene	20	2	18	10	0.24	0.6	0.048	1
Delta-BHC	11	0	11	0	--	--	0.005	0.051
Dibenz[a,h]anthracene	11	0	11	0	--	--	10	10
Dibenzofuran	11	0	11	0	--	--	10	10
Dichlorodiphenyldichloroethane	11	0	11	0	--	--	0.005	0.051
Dichlorodiphenyldichloroethylene	11	0	11	0	--	--	0.005	0.051
Dichlorodiphenyltrichloroethane	11	0	11	0	--	--	0.005	0.051
Dieldrin	11	0	11	0	--	--	0.005	0.051
Diethylphthalate	11	0	11	0	--	--	10	10
Dimethyl phthalate	11	0	11	0	--	--	10	10
Di-n-butylphthalate	11	6	5	55	0.593	3	10	10
Di-n-octylphthalate	11	0	11	0	--	--	10	10
Endosulfan I	11	0	11	0	--	--	0.005	0.051
Endosulfan II	11	0	11	0	--	--	0.005	0.051
Endosulfan sulfate	11	0	11	0	--	--	0.005	0.051
Endrin	11	0	11	0	--	--	0.005	0.051
Endrin aldehyde	11	0	11	0	--	--	0.005	0.051
Endrin ketone	11	0	11	0	--	--	0.005	0.051
Ethyl cyanide	20	0	20	0	--	--	0.88	2.6
Ethylbenzene	9	0	9	0	--	--	0.064	1
Fluoranthene	11	0	11	0	--	--	10	10

Table 6-2. Summary of Groundwater Data Used for 100-KR-4 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Fluorene	11	0	11	0	--	--	10	10
Gamma-BHC (lindane)	11	0	11	0	--	--	0.005	0.051
gamma-Chlordane	11	0	11	0	--	--	0.005	0.051
Heptachlor	11	0	11	0	--	--	0.005	0.051
Heptachlor epoxide	11	3	8	27	0.18	1.1	0.005	0.051
Hexachlorobenzene	11	0	11	0	--	--	10	10
Hexachlorobutadiene	11	0	11	0	--	--	10	10
Hexachlorocyclopentadiene	11	0	11	0	--	--	10	10
Hexachloroethane	11	0	11	0	--	--	10	10
Indeno[1,2,3-cd]pyrene	11	0	11	0	--	--	10	10
Isophorone	11	0	11	0	--	--	10	10
Methoxychlor	11	0	11	0	--	--	0.005	0.051
Methyl isobutyl ketone	20	0	20	0	--	--	0.1	1.3
Methylenechloride	20	9	11	45	0.3	8.9	0.1	0.76
Naphthalene	11	0	11	0	--	--	10	10
Nitrobenzene	11	0	11	0	--	--	10	10
N-Nitroso-di-n-dipropylamine	11	0	11	0	--	--	10	10
N-Nitrosodiphenylamine	11	0	11	0	--	--	10	10
Pentachlorophenol	11	0	11	0	--	--	25	26
Phenanthrene	11	0	11	0	--	--	10	10
Phenol	11	0	11	0	--	--	10	10
Pyrene	11	0	11	0	--	--	10	10
Tetrachloroethene	20	0	20	0	--	--	0.08	1
Tetrahydrofuran	14	0	14	0	--	--	1.2	2.9
Toluene	20	0	20	0	--	--	0.025	1
Toxaphene	11	0	11	0	--	--	0.05	0.51
Total petroleum hydrocarbons-diesel range	3	0	3	0	--	--	33	71
Total petroleum hydrocarbons-gasoline range	3	0	3	0	--	--	7.9	50
Total petroleum hydrocarbon - kerosene range	3	0	3	0	--	--	36	500

Table 6-2. Summary of Groundwater Data Used for 100-KR-4 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
trans-1,2-Dichloroethylene	20	0	20	0	--	--	0.016	1
Trichloroethene	20	19	1	95	0.3	24	0.4	0.4
Vinyl chloride	20	0	20	0	--	--	0.044	1
Xylenes (total)	20	0	20	0	--	--	0.13	1
Radionuclides (pCi/L)								
Americium-241	11	0	11	0	--	--	15	200
Antimony-125	157	0	157	0	--	--	-12.6	90
Beryllium-7	155	0	155	0	--	--	-464	380
Carbon-14	160	154	6	96	19.9	35,600	-6.87	28.3
Cesium-134	157	0	157	0	--	--	-15.1	44
Cesium-137	178	0	178	0	--	--	-34.7	38
Cobalt-58	21	0	21	0	--	--	-4.92	5.94
Cobalt-60	178	0	178	0	--	--	-18.3	38
Europium-152	155	0	155	0	--	--	-17.5	91
Europium-154	177	0	177	0	--	--	-11.6	120
Europium-155	178	0	178	0	--	--	-15	96
Gross alpha	668	428	240	64	0.84	17	-5.2	12.8
Gross beta	699	659	40	94	3.12	23,800	-12.7	31.7
Iodine-129	2	0	2	0	--	--	0.0893	0.228
Iron-59	21	0	21	0	--	--	-16	7.63
Plutonium-238	2	0	2	0	--	--	-0.0807	-0.00409
Plutonium-239/240	2	0	2	0	--	--	-0.0403	0.0429
Potassium-40	160	10	150	6.3	37.3	900	-195	1100
Radium-226	17	5	12	29	14.9	45	0.027	33.6
Radium-228	12	4	8	33	2.04	58.6	-0.01	1.02
Ruthenium-106	157	0	157	0	--	--	-69.8	310
Silver-108 metastable	4	0	4	0	--	--	9	27
Strontium-90	309	153	156	50	0.407	6,970	-18	4.68
Technetium-99	148	61	87	41	2.8	376	-33	10.3
Thorium-228	12	1	11	8.3	24.7	24.7	-0.036	0.078
Thorium-230	11	0	11	0	--	--	-0.078	0.107

Table 6-2. Summary of Groundwater Data Used for 100-KR-4 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Thorium-232	12	1	11	8.3	58.6	58.6	-0.021	0.03
Tritium	892	751	141	84	8.82	2,360,000	-240	17,000
Uranium-233/234	15	13	2	87	0.36	12.8	0.081	3.04
Uranium-235	15	3	12	20	0.073	0.238	0	0.54
Uranium-238	15	15	0	100	0.215	9.82	--	--
Anions (µg/L)								
Alkalinity	125	125	0	100	48,000	6,100,000	--	--
Bromide	86	17	69	20	100	400	90	18,100
Carbon disulfide	20	0	20	0	--	--	0.031	1
Chloride	687	687	0	100	1,100	126,000	--	--
Fluoride	661	565	96	85	13.4	520	12	1,000
Nitrogen in ammonia	2	0	2	0	--	--	21.6	21.6
Nitrogen in nitrate	724	696	28	96	22	76,805	0	4,428
Nitrogen in nitrite	717	58	659	8.1	1.83	1,601	1.0	1,209
Phosphate	11	0	11	0	--	--	250	250
Phosphorous in phosphate	49	3	46	6.1	97.8	111	81.5	220
Sulfate	719	719	0	100	7,800	264,000	--	--
Other								
Coliform bacteria	3	1	2	33	3.1 Col/100mL	3.1 Col/100mL	0 Col/100mL	0 Col/100mL
Dissolved oxygen	480	480	0	100	3.9	95,600	--	--
Hardness	9	9	0	100	134,000	7,800,000	--	--
Oxidation reduction potential	470	470	0	100	-504 mV	511 mV	--	--
pH measurement	1,461	1,461	0	100	6.56	10.707	--	--
Specific conductance	1,549	1,549	0	100	7.65 µS/cm	16,830 µS/cm	--	--
Temperature	1,460	1,460	0	100	10.4 °C	49.5 °C	--	--
Total inorganic carbon	9	9	0	100	4,000	23,200	--	--
Total organic carbon	26	9	17	35	483	8,030	300	1,200
Turbidity	1,410	1,410	0	100	0.1 NTU	1,000 NTU	--	--

-- = not applicable
BHC = benzene hexachloride
NTU = nephelometric turbity unit

Table 6-3. Summary of Groundwater Data Used for the 100-NR-2 Operable Unit Contaminant of Potential Concern Refinement. (8 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (µg/L)								
Aluminum	20	9	11	45	28.8	213	18.3	37
Antimony	42	3	39	7.1	4.4	64.1	4	72
Arsenic	19	5	14	26	5.8	13.8	3.4	79
Barium	42	42	0	100	9.8	168	--	--
Beryllium	38	1	37	2.6	0.31	0.31	0.1	4
Bismuth	15	0	15	0	--	--	5.1	6.1
Boron	15	15	0	100	14.4	47.1	--	--
Cadmium	42	2	40	4.8	0.83	2.4	0.7	6.8
Calcium	42	42	0	100	9,500	158,000	--	--
Calculated total uranium	15	13	2	87	0.65	5.3	0.28	0.71
Chromium	42	30	12	71	3.4	1,370	1.6	7
Cobalt	42	6	36	14	3	24.6	1.2	7
Copper	42	10	32	24	1.2	90.2	1.2	7
Hexavalent chromium	18	5	13	28	7	175	2	2
Iron	42	33	9	79	16.4	223,000	5.3	34.9
Lead	19	0	19	0	--	--	3.1	47
Lithium	15	15	0	100	0.62	13.8	--	--
Magnesium	42	42	0	100	1,970	33,700	--	--
Manganese	42	26	16	62	0.22	1,330	0.3	4
Mercury	15	0	15	0	--	--	0.1	0.1
Molybdenum	19	5	14	26	1.7	28	1.3	11
Nickel	42	22	20	52	2.3	665	1.3	14.1
Phosphorus	15	13	2	87	17.4	93.6	8.3	9
Potassium	42	42	0	100	882	15,500	--	--
Selenium	15	1	14	6.7	4.8	4.8	3.6	4.7
Silicon	15	15	0	100	7,320	17,500	--	--
Silver	42	6	36	14	2.4	17.5	0.7	11
Sodium	42	42	0	100	2,370	143,000	--	--
Strontium (elemental)	41	41	0	100	43.1	629	--	--

Table 6-3. Summary of Groundwater Data Used for the 100-NR-2 Operable Unit Contaminant of Potential Concern Refinement. (8 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Thallium	15	1	14	6.7	6.6	6.6	6.4	7
Tin	15	1	14	6.7	10.7	10.7	5.2	10.7
Titanium	1	1	0	100	171	171	--	--
Uranium (inorganic)	15	1	14	6.7	29.4	29.4	8.8	20.6
Vanadium	42	26	16	62	1.7	49.2	0.9	14
Zinc	42	31	11	74	0.9	210	4	9.6
Organics (µg/L)								
1,1,1-Trichloroethane	9	0	9	0	--	--	0.08	1
1,1,2-Trichloroethane	9	0	9	0	--	--	0.07	1
1,1-Dichloroethane	9	0	9	0	--	--	0.07	1
1,1-Dichloroethene	4	0	4	0	--	--	0.04	1
1,2,4-Trichlorobenzene	15	0	15	0	--	--	10	10
1,2-Dichlorobenzene	15	0	15	0	--	--	10	10
1,2-Dichloroethane	9	0	9	0	--	--	0.09	1
1,3-Dichlorobenzene	15	0	15	0	--	--	10	10
1,4-Dichlorobenzene	24	0	24	0	--	--	0.09	10
1,4-Dioxane	1	0	1	0	--	--	2.6	2.6
1-Butanol	10	0	10	0	--	--	1.1	5,000
2,4,5-Trichlorophenol	15	0	15	0	--	--	25	26
2,4,6-Trichlorophenol	15	0	15	0	--	--	10	10
2,4-Dichlorophenol	16	0	16	0	--	--	1.5	10
2,4-Dimethylphenol	15	0	15	0	--	--	10	10
2,4-Dinitrophenol	15	0	15	0	--	--	25	26
2,4-Dinitrotoluene	15	0	15	0	--	--	10	10
2,6-Dinitrotoluene	15	0	15	0	--	--	10	10
2-Butanone	9	0	9	0	--	--	0.33	1
2-Butoxyethanol	1	0	1	0	--	--	5,000	5,000
2-Chloronaphthalene	15	0	15	0	--	--	10	10
2-Chlorophenol	15	0	15	0	--	--	10	10
2-Methylnaphthalene	15	1	14	6.7	2	2	10	10
2-Methylphenol [cresol, o-]	16	0	16	0	--	--	0.85	10

Table 6-3. Summary of Groundwater Data Used for the 100-NR-2 Operable Unit Contaminant of Potential Concern Refinement. (8 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
2-Nitroaniline	15	0	15	0	--	--	25	26
2-Nitrophenol	16	0	16	0	--	--	1.2	10
3,3'-Dichlorobenzidine	15	0	15	0	--	--	10	10
3+4 Methylphenol [cresol, m+p]	15	0	15	0	--	--	10	10
3-Nitroaniline	15	0	15	0	--	--	25	26
4,6-Dinitro-2-methylphenol	15	0	15	0	--	--	25	26
4-Bromophenylphenyl ether	15	0	15	0	--	--	10	10
4-Chloro-3-methylphenol	15	0	15	0	--	--	10	10
4-Chloroaniline	15	0	15	0	--	--	10	10
4-Chlorophenylphenyl ether	15	0	15	0	--	--	10	10
4-Methylphenol [cresol, p-]	1	0	1	0	--	--	0.74	0.74
4-Nitroaniline	15	0	15	0	--	--	25	26
4-Nitrophenol	15	0	15	0	--	--	25	26
Acenaphthene	15	0	15	0	--	--	10	10
Acenaphthylene	15	0	15	0	--	--	10	10
Acetone	9	4	5	44	1	3.1	0.33	1.9
Aldrin	15	1	14	6.7	0.11	0.11	0.04	0.051
Alpha-BHC	15	2	13	13	0.037	0.052	0.04	0.051
alpha-Chlordane	15	0	15	0	--	--	0.04	0.051
Anthracene	15	0	15	0	--	--	10	10
Aroclor-1016	15	0	15	0	--	--	0.4	40
Aroclor-1221	15	0	15	0	--	--	0.4	40
Aroclor-1232	15	0	15	0	--	--	0.4	40
Aroclor-1242	15	0	15	0	--	--	0.4	40
Aroclor-1248	15	0	15	0	--	--	0.4	40
Aroclor-1254	15	0	15	0	--	--	0.4	40
Aroclor-1260	15	0	15	0	--	--	0.4	40
Benzene	9	1	8	11	0.95	0.95	0.13	1
Benzo[a]anthracene	15	0	15	0	--	--	10	10
Benzo[a]pyrene	15	0	15	0	--	--	10	10
Benzo[b]fluoranthene	15	0	15	0	--	--	10	10

Table 6-3. Summary of Groundwater Data Used for the 100-NR-2 Operable Unit Contaminant of Potential Concern Refinement. (8 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Benzo[ghi]perylene	15	0	15	0	--	--	10	10
Benzo[k]fluoranthene	15	0	15	0	--	--	10	10
Benzothiazole	1	0	1	0	--	--	10	10
beta-1,2,3,4,5,6-Hexachlorocyclohexane	15	0	15	0	--	--	0.04	0.051
Bis[2-chloro-1-methylethyl]ether	15	0	15	0	--	--	10	10
Bis[2-Chloroethoxy]methane	15	0	15	0	--	--	10	10
Bis[2-chloroethyl] ether	15	0	15	0	--	--	10	10
Bis[2-ethylhexyl] phthalate	16	12	4	75	0.6	2.906	0.45	10
Butylbenzylphthalate	15	0	15	0	--	--	10	10
Carbazole	15	0	15	0	--	--	10	10
Carbon tetrachloride	9	0	9	0	--	--	0.09	1
Chlorobenzene	1	0	1	0	--	--	1	1
Chloroform	9	3	6	33	1	1.9	0.07	1
Chrysene	15	0	15	0	--	--	10	10
cis-1,2-Dichloroethylene	9	0	9	0	--	--	0.1	1
Decane	1	0	1	0	--	--	10	10
Delta-BHC	15	1	14	6.7	0.2	0.2	0.04	0.051
Dibenz[a,h]anthracene	15	0	15	0	--	--	10	10
Dibenzofuran	15	0	15	0	--	--	10	10
Dichlorodiphenyldichloroethane	15	2	13	13	0.23	1.6	0.04	0.051
Dichlorodiphenyldichloroethylene	15	0	15	0	--	--	0.04	0.051
Dichlorodiphenyltrichloroethane	15	2	13	13	0.063	0.083	0.04	0.051
Dieldrin	15	1	14	6.7	0.024	0.024	0.04	0.051
Diethyl ether	1	0	1	0	--	--	0.5	0.5
Diethylphthalate	15	0	15	0	--	--	10	10
Dimethyl phthalate	15	0	15	0	--	--	10	10
Di-n-butylphthalate	15	3	12	20	0.5	1.282	10	10
Di-n-octylphthalate	15	0	15	0	--	--	10	10
Dodecane	1	0	1	0	--	--	10	10
Endosulfan I	15	0	15	0	--	--	0.04	0.051
Endosulfan II	15	0	15	0	--	--	0.04	0.051

Table 6-3. Summary of Groundwater Data Used for the 100-NR-2 Operable Unit Contaminant of Potential Concern Refinement. (8 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Endosulfan sulfate	15	2	13	13	0.032	0.054	0.04	0.051
Endrin	15	2	13	13	0.12	0.14	0.04	0.051
Endrin aldehyde	15	1	14	6.7	0.015	0.015	0.04	0.051
Endrin ketone	15	2	13	13	0.032	0.044	0.04	0.051
Ethanol	1	0	1	0	--	--	380	380
Ethyl acetate	1	0	1	0	--	--	5,000	5,000
Ethyl cyanide	9	0	9	0	--	--	0.88	2
Ethylbenzene	5	1	4	20	3.9	3.9	0.24	1
Ethylene glycol	1	0	1	0	--	--	5,000	5,000
Fluoranthene	15	0	15	0	--	--	10	10
Fluorene	15	0	15	0	--	--	10	10
Gamma-BHC (lindane)	15	0	15	0	--	--	0.04	0.051
gamma-Chlordane	15	2	13	13	0.12	0.5	0.04	0.051
Heptachlor	15	2	13	13	0.36	0.41	0.04	0.051
Heptachlor epoxide	15	2	13	13	0.037	0.28	0.04	0.051
Hexachlorobenzene	15	0	15	0	--	--	10	10
Hexachlorobutadiene	15	0	15	0	--	--	10	10
Hexachlorocyclopentadiene	15	0	15	0	--	--	10	10
Hexachloroethane	15	0	15	0	--	--	10	10
Indeno[1,2,3-cd]pyrene	15	0	15	0	--	--	10	10
Isophorone	15	0	15	0	--	--	10	10
Methanol	1	0	1	0	--	--	930	930
Methoxychlor	15	2	13	13	0.02	0.055	0.04	0.051
Methyl isobutyl ketone	9	0	9	0	--	--	0.1	1
Methylenechloride	9	3	6	33	0.26	0.86	0.12	1
Naphthalene	16	0	16	0	--	--	1.6	10
Nitrobenzene	15	0	15	0	--	--	10	10
N-Nitroso-di-n-dipropylamine	15	0	15	0	--	--	10	10
N-Nitrosodiphenylamine	15	0	15	0	--	--	10	10
Pentachlorophenol	16	0	16	0	--	--	0.84	26
Phenanthrene	15	0	15	0	--	--	10	10

Table 6-3. Summary of Groundwater Data Used for the 100-NR-2 Operable Unit Contaminant of Potential Concern Refinement. (8 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Phenol	16	0	16	0	--	--	0.7	10
Pyrene	15	0	15	0	--	--	10	10
Tetrachloroethene	9	2	7	22	0.38	0.4	0.1	1
Tetradecane	1	0	1	0	--	--	10	10
Tetrahydrofuran	8	0	8	0	--	--	1.2	2.3
Toluene	9	1	8	11	0.14	0.14	0.16	1
Total organic carbon	1,056	694	362	66	140	15,200	140	760
Total organic halides	1,010	751	259	74	2.2	323	2.2	8.5
Total petroleum hydrocarbons	11	5	6	45	5,300	98,500	510	1,000
Total petroleum hydrocarbons – diesel range	113	31	82	27	580	630,000,000	33	60,000
Total petroleum hydrocarbons – gasoline range	90	18	72	20	120	4,300,000	7.9	900
Total petroleum hydrocarbons – kerosene range	12	0	12	0	--	--	71	7,100
Total petroleum hydrocarbons – motor oil (high boiling)	3	1	2	33	7,400	7,400	120	130
Toxaphene	15	0	15	0	--	--	0.4	0.51
trans-1,2-Dichloroethylene	9	0	9	0	--	--	0.08	1
Tributyl phosphate	1	0	1	0	--	--	50	50
Trichloroethene	9	0	9	0	--	--	0.13	1
Tris-2-chloroethyl phosphate	1	0	1	0	--	--	10	10
Vinyl chloride	9	0	9	0	--	--	0.07	1
Xylenes (total)	9	1	8	11	3.7	3.7	0.14	1
Radionuclides (pCi/L)								
Americium-241	15	0	15	0	--	--	10	200
Antimony-125	215	0	215	0	--	--	-31.3	110
Beryllium-7	213	0	213	0	--	--	-262	570
Carbon-14	1	0	1	0	--	--	20.8	20.8
Cesium-134	215	0	215	0	--	--	-9.01	59
Cesium-137	228	2	226	0.88	3.02	16	-40.3	48
Cobalt-58	8	0	8	0	--	--	-8.86	1.27

Table 6-3. Summary of Groundwater Data Used for the 100-NR-2 Operable Unit Contaminant of Potential Concern Refinement. (8 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Cobalt-60	227	2	225	0.88	11.5	38.6	-56.5	49
Europium-152	216	0	216	0	--	--	-72.6	122
Europium-154	227	0	227	0	--	--	-36.1	150
Europium-155	227	1	226	0.44	26.9	26.9	-43.2	130
Gross alpha	236	47	189	20	1.2	150	-4.11	11.4
Gross beta	592	585	7	99	0.0402	50,000	-2.13	3.26
Iodine-129	1	0	1	0	--	--	-0.0584	-0.0584
Iron-59	8	0	8	0	--	--	-11.1	7.31
Potassium-40	215	1	214	0.47	92.7	92.7	-546	1300
Radium-226	17	2	15	12	84.9	102	-0.316	1.16
Radium-228	15	1	14	6.7	2.33	2.33	-4.36	1.05
Ruthenium-106	215	0	215	0	--	--	-170	390
Silver-108 metastable	2	0	2	0	--	--	6.4	35
Strontium-90	512	400	112	78	0.418	26,000	-1.01	0.935
Technetium-99	1	0	1	0	--	--	-0.417	-0.417
Thorium-228	15	0	15	0	--	--	-0.052	0.182
Thorium-230	15	2	13	13	0.186	0.288	-0.1	0.1
Thorium-232	15	0	15	0	--	--	-0.013	0.1
Tritium	483	394	89	82	230	59,700	-620	242
Uranium-233/234	15	13	2	87	0.259	2.11	0.093	0.203
Uranium-235	15	0	15	0	--	--	0	0.156
Uranium-238	15	13	2	87	0.216	1.78	0.093	0.237
Anions (µg/L)								
Bromide	90	1	89	1.1	1,010	1,010	250	5,000
Carbon disulfide	9	0	9	0	--	--	0.13	1
Carbonate ion	1	1	0	100	48,100	48,100	--	--
Chloride	612	611	1	100	880	148,000	35	35
Fluoride	612	449	163	73	15	2,800	5.1	10,000
Nitrogen in nitrate	612	598	14	98	14	92,618	2.0	5,645
Nitrogen in nitrite	611	65	546	11	11	1,401	1.0	1,522
Phosphate	15	0	15	0	--	--	250	250

Table 6-3. Summary of Groundwater Data Used for the 100-NR-2 Operable Unit Contaminant of Potential Concern Refinement. (8 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Phosphorous in phosphate	143	48	95	34	3.34	26,189	3.3	815
Sulfate	612	611	1	100	250	390,000	203,000	203,000
Other								
Alkalinity	391	390	1	100	3,200	754,000	1,000	1,000
Dissolved oxygen	458	458	0	100	80	104,400	--	--
Oil and grease	83	39	44	47	930	4,460,000	700	5,000
Oxidation reduction potential	123	123	0	100	-260.1 mV	450 mV	--	--
pH measurement	1,572	1,572	0	100	6.52	9.18	--	--
Specific conductance	1,700	1,700	0	100	116 µS/cm	1,620 µS/cm	--	--
Temperature	1,552	1,552	0	100	4.2 °C	28.1 °C	--	--
Turbidity	1,346	1,346	0	100	0.08 NTU	1,000 NTU	--	--

-- = not applicable
BHC = benzene hexachloride
NTU = nephelometric turbity unit

Table 6-4. Summary of Groundwater Data Used for 100-HR-3 Operable Unit Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (µg/L)								
Aluminum	344	189	155	55	14.3	789	10.1	94.8
Antimony	466	25	441	5.4	2.1	437	1.7	720
Arsenic	42	28	14	67	0.66	80.1	3	38.1
Barium	468	468	0	100	12.4	213	--	--
Beryllium	466	67	399	14	0.1	2.4	0.1	10
Bismuth	20	0	20	0	--	--	5.1	6.5
Boron	22	22	0	100	15.4	70.2	--	--
Cadmium	470	7	463	1.5	0.34	6.1	0.3	30
Calcium	470	470	0	100	3,780	166,000	--	--
Calculated total uranium	21	17	4	81	0.59	9.25	-0.088	0.71
Chromium	472	449	23	95	0.97	9,970	1	70
Cobalt	466	50	416	11	0.53	88.4	0.5	70
Copper	472	123	349	26	1.2	210	0.5	70
Hexavalent chromium	1,147	1,065	82	93	1	61,000	0	5
Iron	470	405	65	86	9	5,470	6.4	330
Lead	65	4	61	6.2	2.2	3.9	1.7	37.2
Lithium	20	20	0	100	1.2	8.4	--	--
Magnesium	470	470	0	100	801	65,800	--	--
Manganese	470	327	143	70	0.2	595	0.2	30
Mercury	22	0	22	0	--	--	0.1	0.1
Molybdenum	24	17	7	71	1.3	49.6	1.3	2.9
Nickel	466	171	295	37	1	95.5	0.9	50
Phosphorus	20	15	5	75	13.2	44.3	8.3	8.3
Potassium	472	456	16	97	1,360	8,490,000	1,330	3,000
Selenium	27	4	23	15	3.6	5.3	3.5	44
Silica	4	4	0	100	4,990	22,800	--	--
Silicon	20	20	0	100	10,300	19,900	--	--
Silver	470	30	440	6.4	1.1	30.4	0.5	110
Sodium	472	472	0	100	3,560	1,780,000	--	--

Table 6-4. Summary of Groundwater Data Used for 100-HR-3 Operable Unit Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Strontium (elemental)	443	443	0	100	102	948	--	--
Sulfur	4	4	0	100	30,800	1,460,000	--	--
Thallium	23	1	22	4.3	8.4	8.4	3.7	50.2
Tin	58	1	57	1.7	3.2	3.2	2.6	10.7
Uranium (inorganic)	198	178	20	90	0.048	157	0.43	20.6
Vanadium	468	366	102	78	1.7	72.9	0.88	140
Zinc	470	382	88	81	0.85	539	0.5	9.6
Organics (µg/L)								
1,2,4-Trichlorobenzene	20	0	20	0	--	--	10	10
1,2-Dichlorobenzene	20	0	20	0	--	--	10	10
1,3-Dichlorobenzene	20	0	20	0	--	--	10	10
1,4-Dichlorobenzene	20	0	20	0	--	--	10	10
2,3,4,6-Tetrachlorophenol	5	0	5	0	--	--	1.4	1.4
2,4,5-Trichlorophenol	25	0	25	0	--	--	1.8	26
2,4,6-Trichlorophenol	25	0	25	0	--	--	2.4	10
2,4-Dichlorophenol	25	0	25	0	--	--	1.9	10
2,4-Dimethylphenol	25	0	25	0	--	--	1.8	10
2,4-Dinitrophenol	25	1	24	4	1.1	1.1	0.53	26
2,4-Dinitrotoluene	20	0	20	0	--	--	10	10
2,6-Dichlorophenol	5	0	5	0	--	--	1.9	1.9
2,6-Dinitrotoluene	20	0	20	0	--	--	10	10
2-Chloronaphthalene	20	0	20	0	--	--	10	10
2-Chlorophenol	25	0	25	0	--	--	1.9	10
2-Methylnaphthalene	20	0	20	0	--	--	10	10
2-Methylphenol [cresol, o-]	25	0	25	0	--	--	1.8	10
2-Nitroaniline	20	0	20	0	--	--	25	26
2-Nitrophenol	25	0	25	0	--	--	1.5	10
2-secButyl-4,6-dinitrophenol [DNBP]	5	1	4	20	0.6	0.6	0.52	0.52
3,3'-Dichlorobenzidine	20	0	20	0	--	--	10	10
3+4 Methylphenol [cresol, m+p]	25	0	25	0	--	--	3.5	10
3-Nitroaniline	20	0	20	0	--	--	25	26

Table 6-4. Summary of Groundwater Data Used for 100-HR-3 Operable Unit Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
4,6-Dinitro-2-methylphenol	25	1	24	4	0.6	0.6	0.46	26
4-Bromophenylphenyl ether	20	0	20	0	--	--	10	10
4-Chloro-3-methylphenol	25	0	25	0	--	--	2	10
4-Chloroaniline	20	0	20	0	--	--	10	10
4-Chlorophenylphenyl ether	20	0	20	0	--	--	10	10
4-Nitroaniline	20	0	20	0	--	--	25	26
4-Nitrophenol	25	0	25	0	--	--	0.7	26
Acenaphthene	20	0	20	0	--	--	10	10
Acenaphthylene	20	0	20	0	--	--	10	10
Aldrin	20	0	20	0	--	--	0.005	0.05
Alpha-BHC	20	0	20	0	--	--	0.005	0.05
alpha-Chlordane	20	0	20	0	--	--	0.005	0.05
Anthracene	20	0	20	0	--	--	10	10
Aroclor-1016	20	0	20	0	--	--	0	40
Aroclor-1221	20	0	20	0	--	--	0	40
Aroclor-1232	20	0	20	0	--	--	0	40
Aroclor-1242	20	0	20	0	--	--	0	40
Aroclor-1248	20	0	20	0	--	--	0	40
Aroclor-1254	20	1	19	5	8.3	8.3	0	40
Aroclor-1260	20	0	20	0	--	--	0	40
Benzo[a]anthracene	20	0	20	0	--	--	10	10
Benzo[a]pyrene	20	0	20	0	--	--	10	10
Benzo[b]fluoranthene	20	0	20	0	--	--	10	10
Benzo[ghi]perylene	20	0	20	0	--	--	10	10
Benzo[k]fluoranthene	20	0	20	0	--	--	10	10
beta-1,2,3,4,5,6-Hexachlorocyclohexane	20	0	20	0	--	--	0.005	0.05
Bis[2-chloro-1-methylethyl]ether	20	0	20	0	--	--	10	10
Bis[2-Chloroethoxy]methane	20	0	20	0	--	--	10	10
Bis[2-chloroethyl] ether	20	0	20	0	--	--	10	10
Bis[2-ethylhexyl] phthalate	20	18	2	90	0.61	7	10	10
Butylbenzylphthalate	20	0	20	0	--	--	10	10

Table 6-4. Summary of Groundwater Data Used for 100-HR-3 Operable Unit Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Carbazole	20	0	20	0	--	--	10	10
Chrysene	20	0	20	0	--	--	10	10
Delta-BHC	20	0	20	0	--	--	0.005	0.05
Dibenz[a,h]anthracene	20	0	20	0	--	--	10	10
Dibenzofuran	20	0	20	0	--	--	10	10
Dichlorodiphenyldichloroethane	20	0	20	0	--	--	0.005	0.05
Dichlorodiphenyldichloroethylene	20	1	19	5	0.2	0.2	0.005	0.05
Dichlorodiphenyltrichloroethane	20	0	20	0	--	--	0.005	0.05
Dieldrin	20	0	20	0	--	--	0.005	0.05
Diethylphthalate	20	0	20	0	--	--	10	10
Dimethyl phthalate	20	0	20	0	--	--	10	10
Di-n-butylphthalate	20	8	12	40	0.59	1.57	10	10
Di-n-octylphthalate	20	0	20	0	--	--	10	10
Endosulfan I	20	0	20	0	--	--	0.005	0.05
Endosulfan II	20	0	20	0	--	--	0.005	0.05
Endosulfan sulfate	20	0	20	0	--	--	0.005	0.05
Endrin	20	0	20	0	--	--	0.005	0.05
Endrin aldehyde	20	1	19	5	0.13	0.13	0.005	0.05
Endrin ketone	20	0	20	0	--	--	0.005	0.05
Fluoranthene	20	0	20	0	--	--	10	10
Fluorene	20	0	20	0	--	--	10	10
Formate	2	0	2	0	--	--	250	250
Gamma-BHC (lindane)	20	0	20	0	--	--	0.005	0.05
gamma-Chlordane	20	0	20	0	--	--	0.005	0.05
Heptachlor	20	0	20	0	--	--	0.005	0.05
Heptachlor epoxide	20	0	20	0	--	--	0.005	0.05
Hexachlorobenzene	20	0	20	0	--	--	10	10
Hexachlorobutadiene	20	0	20	0	--	--	10	10
Hexachlorocyclopentadiene	20	0	20	0	--	--	10	10
Hexachloroethane	20	0	20	0	--	--	10	10
Indeno[1,2,3-cd]pyrene	20	0	20	0	--	--	10	10

Table 6-4. Summary of Groundwater Data Used for 100-HR-3 Operable Unit Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Isophorone	20	0	20	0	--	--	10	10
Methoxychlor	20	0	20	0	--	--	0.005	0.05
Naphthalene	20	0	20	0	--	--	10	10
Nitrobenzene	20	0	20	0	--	--	10	10
N-Nitroso-di-n-dipropylamine	20	0	20	0	--	--	10	10
N-Nitrosodiphenylamine	20	0	20	0	--	--	10	10
Pentachlorophenol	25	0	25	0	--	--	2.2	26
Phenanthrene	20	0	20	0	--	--	10	10
Phenol	25	0	25	0	--	--	0.94	10
Pyrene	20	0	20	0	--	--	10	10
Total organic carbon	56	56	0	100	528	2,240	--	--
Total organic halides	56	49	7	88	4.35	19.4	2.38	4.62
Toxaphene	20	0	20	0	--	--	0.05	0.5
Radionuclides (pCi/L)								
Americium-241	20	0	20	0	--	--	29	220
Antimony-125	21	0	21	0	--	--	-1.54	120
Beryllium-7	21	0	21	0	--	--	1.1	480
Cesium-134	21	0	21	0	--	--	-2.01	58
Cesium-137	21	0	21	0	--	--	1.46	50
Cobalt-60	21	0	21	0	--	--	0.253	52
Europium-152	21	0	21	0	--	--	0.277	120
Europium-154	21	0	21	0	--	--	-1.47	150
Europium-155	21	0	21	0	--	--	2.66	130
Gross alpha	431	137	294	32	0.75	131	-11	8.6
Gross beta	431	420	11	97	2.3	593	0.87	12
Potassium-40	21	1	20	4.8	259	259	100	1,400
Radium-226	20	0	20	0	--	--	-0.345	0.854
Radium-228	20	0	20	0	--	--	-0.716	1.27
Ruthenium-106	21	0	21	0	--	--	1.49	410
Silver-108 metastable	3	0	3	0	--	--	19	36
Strontium-90	142	62	80	44	0.55	36.8	-1.7	1.4

Table 6-4. Summary of Groundwater Data Used for 100-HR-3 Operable Unit Contaminant of Potential Concern Refinement. (6 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Technetium-99	66	38	28	58	10	1,510	-10.5	9.6
Thorium-228	20	0	20	0	--	--	-0.038	0.121
Thorium-230	20	2	18	10	0.204	0.323	-0.053	0.114
Thorium-232	20	0	20	0	--	--	-0.021	0.02
Tritium	493	379	114	77	7.33	28,300	-133	317
Uranium-233/234	21	18	3	86	0.173	3.91	0.0529	0.133
Uranium-235	21	2	19	9.5	0.096	0.436	0	0.185
Uranium-238	21	17	4	81	0.195	3.04	-0.047	0.233
Anions (µg/L)								
Bromide	129	6	123	4.7	290	2,000	250	5,000
Chloride	691	691	0	100	1,200	58,500	--	--
Cyanide	2	0	2	0	--	--	5	5
Fluoride	691	497	194	72	14.4	1,200	10	12,500
Nitrogen in nitrate	835	828	7	99	12.0	116,111	2.0	1,129
Nitrogen in nitrite	691	62	629	9	13	2,110	0	1,522
Phosphate	20	0	20	0	--	--	250	250
Phosphorous in phosphate	109	0	109	0	--	--	81.5	815
Sodium dithionite	53	52	1	98	55,500	2,761,000,000	0	0
Sulfate	1,335	1,335	0	100	5,900	1,500,000	--	--
Other								
Alkalinity	401	400	1	100	6,000	700,000	2,200	2,200
Dissolved oxygen	751	712	39	95	0.00239	248,300	0	0
Oxidation reduction potential	450	450	0	100	-1,014 mV	682 mV	--	--
pH measurement	2,042	2,042	0	100	6.87	12.83	--	--
Specific conductance	2,091	2,091	0	100	5.27 µS/cm	59,700 µS/cm	--	--
Temperature	2,042	2,042	0	100	5.31 °C	34.2 °C	--	--
Turbidity	1,886	1,883	3	100	0.04 NTU	1,000 NTU	0.92 NTU	1,000 NTU

-- = not applicable
BHC = benzene hexachloride
NTU = nephelometric turbity unit

Table 6-5. Summary of Groundwater Data Used for 100-FR-3 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (µg/L)								
Aluminum	41	21	20	51	21.4	64.4	17	125
Antimony	55	2	53	3.6	3.8	43.6	2.2	45.9
Arsenic	11	3	8	27	6.9	9.3	3.4	6.1
Barium	55	54	1	98	17.1	109	4.6	4.6
Beryllium	55	8	47	15	0.21	0.67	0.1	4
Bismuth	11	0	11	0	--	--	5.1	6.5
Boron	11	11	0	100	18.2	206	--	--
Cadmium	55	0	55	0	--	--	0.24	4.3
Calcium	55	54	1	98	24,700	144,000	89.8	89.8
Calculated total uranium	12	12	0	100	1.25	10.7	--	--
Chromium	55	41	14	75	2.3	80.1	0.65	5.7
Cobalt	55	4	51	7.3	2.4	12.7	0.7	8.2
Copper	55	18	37	33	1.3	9.9	0.86	8.2
Hexavalent chromium	17	9	8	53	3	197	2	2
Iron	55	40	15	73	9.2	775	6.8	49.4
Lead	11	0	11	0	--	--	2.9	3.1
Lithium	11	11	0	100	0.7	22.2	--	--
Magnesium	55	54	1	98	4,590	37,600	159	159
Manganese	55	37	18	67	0.25	177	0.3	4
Mercury	11	0	11	0	--	--	0.1	0.1
Molybdenum	11	7	4	64	1.7	8.1	1.8	2.9
Nickel	55	13	42	24	2.7	29.3	1.3	37.5
Phosphorus	11	11	0	100	14.7	68.8	--	--
Potassium	55	53	2	96	1,150	10,400	1,220	1,700
Selenium	11	1	10	9.1	4.8	4.8	3.6	4.7
Silicon	11	11	0	100	7,240	30,400	--	--
Silver	55	2	53	3.6	7.9	7.9	0.7	5.9
Sodium	55	54	1	98	2,510	84,900	152	152
Strontium (elemental)	55	54	1	98	106	1,150	2.8	2.8

Table 6-5. Summary of Groundwater Data Used for 100-FR-3 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Thallium	11	0	11	0	--	--	6.4	7.3
Tin	11	1	10	9.1	6	6	5.1	10.7
Uranium (inorganic)	52	49	3	94	0.69	34.2	9.2	20.6
Vanadium	55	47	8	85	1.2	31.4	0.9	12.6
Zinc	55	40	15	73	1.6	40.9	1.6	14.3
Organics (µg/L)								
1,1,1-Trichloroethane	115	0	115	0	--	--	0.07	1
1,1,2-Trichloroethane	115	0	115	0	--	--	0.05	1
1,1-Dichloroethane	115	0	115	0	--	--	0.07	1
1,1-Dichloroethene	19	0	19	0	--	--	0.04	1
1,2,4-Trichlorobenzene	11	0	11	0	--	--	10	10
1,2-Dichlorobenzene	11	0	11	0	--	--	10	10
1,2-Dichloroethane	115	4	111	3.5	0.083	0.34	0.08	1
1,3-Dichlorobenzene	11	0	11	0	--	--	10	10
1,4-Dichlorobenzene	125	4	121	3.2	0.21	0.24	0.09	10
1,4-Dioxane	31	0	31	0	--	--	2.6	13
1-Butanol	114	0	114	0	--	--	1.1	100
2,4,5-Trichlorophenol	11	0	11	0	--	--	25	26
2,4,6-Trichlorophenol	11	0	11	0	--	--	10	10
2,4-Dichlorophenol	11	0	11	0	--	--	10	10
2,4-Dimethylphenol	11	0	11	0	--	--	10	10
2,4-Dinitrophenol	11	0	11	0	--	--	25	26
2,4-Dinitrotoluene	11	0	11	0	--	--	10	10
2,6-Dinitrotoluene	11	0	11	0	--	--	10	10
2-Butanone	115	3	112	2.6	0.8	1.0	0.1	1.0
2-Chloronaphthalene	11	0	11	0	--	--	10	10
2-Chlorophenol	11	0	11	0	--	--	10	10
2-Methylnaphthalene	11	0	11	0	--	--	10	10
2-Methylphenol [cresol, o-]	11	0	11	0	--	--	10	10
2-Nitroaniline	11	0	11	0	--	--	25	26
2-Nitrophenol	11	0	11	0	--	--	10	10

Table 6-5. Summary of Groundwater Data Used for 100-FR-3 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
3,3'-Dichlorobenzidine	11	0	11	0	--	--	10	10
3+4 Methylphenol [cresol, m+p]	11	0	11	0	--	--	10	10
3-Nitroaniline	11	0	11	0	--	--	25	26
4,6-Dinitro-2-methylphenol	11	0	11	0	--	--	25	26
4-Bromophenylphenyl ether	11	0	11	0	--	--	10	10
4-Chloro-3-methylphenol	11	0	11	0	--	--	10	10
4-Chloroaniline	11	0	11	0	--	--	10	10
4-Chlorophenylphenyl ether	11	0	11	0	--	--	10	10
4-Nitroaniline	11	0	11	0	--	--	25	26
4-Nitrophenol	11	0	11	0	--	--	25	26
Acenaphthene	11	0	11	0	--	--	10	10
Acenaphthylene	11	0	11	0	--	--	10	10
Acetone	115	22	93	19	0.3	9	0.21	4
Aldrin	11	0	11	0	--	--	0.005	0.052
Alpha-BHC	11	0	11	0	--	--	0.005	0.052
alpha-Chlordane	11	0	11	0	--	--	0.005	5
Anthracene	11	0	11	0	--	--	10	10
Aroclor-1016	11	0	11	0	--	--	0.4	0.41
Aroclor-1221	11	0	11	0	--	--	0.4	0.41
Aroclor-1232	11	0	11	0	--	--	0.4	0.41
Aroclor-1242	11	0	11	0	--	--	0.4	0.41
Aroclor-1248	11	0	11	0	--	--	0.4	0.41
Aroclor-1254	11	0	11	0	--	--	0.4	0.41
Aroclor-1260	11	0	11	0	--	--	0.4	0.41
Benzene	115	0	115	0	--	--	0.05	1
Benzo[a]anthracene	11	0	11	0	--	--	10	10
Benzo[a]pyrene	11	0	11	0	--	--	10	10
Benzo[b]fluoranthene	11	0	11	0	--	--	10	10
Benzo[ghi]perylene	11	0	11	0	--	--	10	10
Benzo[k]fluoranthene	11	0	11	0	--	--	10	10
beta-1,2,3,4,5,6-Hexachlorocyclohexane	11	0	11	0	--	--	0.005	0.052

Table 6-5. Summary of Groundwater Data Used for 100-FR-3 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Bis[2-chloro-1-methylethyl]ether	11	0	11	0	--	--	10	10
Bis[2-Chloroethoxy]methane	11	0	11	0	--	--	10	10
Bis[2-chloroethyl] ether	11	0	11	0	--	--	10	10
Bis[2-ethylhexyl] phthalate	11	11	0	100	0.5	4	--	--
Butylbenzylphthalate	11	0	11	0	--	--	10	10
Carbazole	11	0	11	0	--	--	10	10
Carbon tetrachloride	115	4	111	3.5	0.2	1	0.09	1
Chlorobenzene	10	0	10	0	--	--	0.28	1
Chloroform	115	53	62	46	0.083	2.4	0.07	1
Chrysene	11	0	11	0	--	--	10	10
cis-1,2-Dichloroethylene	115	0	115	0	--	--	0.06	1
Delta-BHC	11	0	11	0	--	--	0.005	0.052
Dibenz[a,h]anthracene	11	0	11	0	--	--	10	10
Dibenzofuran	11	0	11	0	--	--	10	10
Dichlorodiphenyldichloroethane	11	0	11	0	--	--	0.005	0.052
Dichlorodiphenyldichloroethylene	11	0	11	0	--	--	0.005	5
Dichlorodiphenyltrichloroethane	11	0	11	0	--	--	0.005	0.052
Dieldrin	11	0	11	0	--	--	0.005	0.052
Diethylphthalate	11	0	11	0	--	--	10	10
Dimethyl phthalate	11	0	11	0	--	--	10	10
Di-n-butylphthalate	11	9	2	82	0.6	2	10	10
Di-n-octylphthalate	11	0	11	0	--	--	10	10
Endosulfan I	11	0	11	0	--	--	0.005	5
Endosulfan II	11	0	11	0	--	--	0.005	0.052
Endosulfan sulfate	11	0	11	0	--	--	0.005	0.052
Endrin	11	0	11	0	--	--	0.005	0.052
Endrin aldehyde	11	2	9	18	0.011	0.014	0.005	0.052
Endrin ketone	11	0	11	0	--	--	0.005	0.052
Ethyl cyanide	114	0	114	0	--	--	0.68	2.6
Ethylbenzene	56	0	56	0	--	--	0.07	1
Fluoranthene	11	0	11	0	--	--	10	10

Table 6-5. Summary of Groundwater Data Used for 100-FR-3 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Fluorene	11	0	11	0	--	--	10	10
Gamma-BHC (lindane)	11	0	11	0	--	--	0.005	0.052
gamma-Chlordane	11	0	11	0	--	--	0.005	5
Heptachlor	11	0	11	0	--	--	0.005	0.052
Heptachlor epoxide	11	1	10	9.1	0.37	0.37	0.005	5
Hexachlorobenzene	11	0	11	0	--	--	10	10
Hexachlorobutadiene	11	0	11	0	--	--	10	10
Hexachlorocyclopentadiene	11	0	11	0	--	--	10	10
Hexachloroethane	11	0	11	0	--	--	10	10
Indeno[1,2,3-cd]pyrene	11	0	11	0	--	--	10	10
Isophorone	11	0	11	0	--	--	10	10
Methoxychlor	11	0	11	0	--	--	0.005	0.052
Methyl isobutyl ketone	115	0	115	0	--	--	0.1	1.3
Methylenechloride	115	13	102	11	0.2	5.6	0.1	1
Naphthalene	11	0	11	0	--	--	10	10
Nitrobenzene	11	0	11	0	--	--	10	10
N-Nitroso-di-n-dipropylamine	11	0	11	0	--	--	10	10
N-Nitrosodiphenylamine	11	0	11	0	--	--	10	10
Pentachlorophenol	11	0	11	0	--	--	25	26
Phenanthrene	11	0	11	0	--	--	10	10
Phenol	11	0	11	0	--	--	10	10
Pyrene	11	0	11	0	--	--	10	10
Tetrachloroethene	115	0	115	0	--	--	0.08	1
Tetrahydrofuran	97	0	97	0	--	--	1.2	2.9
Toluene	115	0	115	0	--	--	0.07	1
Toxaphene	11	0	11	0	--	--	0.05	0.52
trans-1,2-Dichloroethylene	115	0	115	0	--	--	0.05	1
Trichloroethene	115	64	51	56	0.29	19	0.09	1
Vinyl chloride	115	0	115	0	--	--	0.07	1
Xylenes (total)	114	0	114	0	--	--	0.13	1

Table 6-5. Summary of Groundwater Data Used for 100-FR-3 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Radionuclides (pCi/L)								
Americium-241	11	0	11	0	--	--	8.1	200
Antimony-125	15	0	15	0	--	--	-1.7	120
Beryllium-7	14	0	14	0	--	--	-28.3	630
Carbon-14	12	3	9	25	8.59	11.9	-1.58	7.51
Cesium-134	15	0	15	0	--	--	0.0766	57
Cesium-137	15	0	15	0	--	--	-1.54	53
Cobalt-60	15	0	15	0	--	--	-0.672	52
Europium-152	15	0	15	0	--	--	-2.97	120
Europium-154	15	0	15	0	--	--	-2.28	150
Europium-155	15	0	15	0	--	--	-0.264	130
Gross alpha	143	111	32	78	0.874	62.9	0.166	3.07
Gross beta	142	142	0	100	2.69	163	--	--
Iodine-129	2	0	2	0	--	--	0.0812	0.105
Potassium-40	15	0	15	0	--	--	-63.3	1,300
Radium-226	11	0	11	0	--	--	-0.247	0.916
Radium-228	11	0	11	0	--	--	-1.75	1.53
Ruthenium-106	15	0	15	0	--	--	-21.9	440
Silver-108 metastable	3	0	3	0	--	--	7.8	18
Strontium-90	145	83	62	57	0.336	77.3	-0.263	0.59
Technetium-99	4	0	4	0	--	--	-5.59	7.33
Thorium-228	11	1	10	9.1	0.132	0.132	-0.024	0.081
Thorium-230	11	2	9	18	0.26	0.344	-0.082	0.175
Thorium-232	11	0	11	0	--	--	0	0.031
Tritium	169	112	57	66	240	38,600	-121	273
Uranium-233/234	12	12	0	100	0.299	3.8	--	--
Uranium-235	12	3	9	25	0.141	0.254	0	0.135
Uranium-238	12	12	0	100	0.418	3.54	--	--
Anions (µg/L)								
Bromide	11	4	7	36	260	510	250	250
Carbon disulfide	115	2	113	1.7	0.42	2.8	0.06	1

Table 6-5. Summary of Groundwater Data Used for 100-FR-3 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Chloride	200	200	0	100	740	85,100	--	--
Fluoride	199	192	7	96	18	800	250	250
Nitrogen in nitrate	200	199	1	100	32.1	44,728	56.5	56.5
Nitrogen in nitrite	199	4	195	2	15	380	1.0	1,902
Phosphate	11	0	11	0	--	--	250	250
Sulfate	200	200	0	100	9,800	220,000	--	--
Other								
Alkalinity	114	114	0	100	58,000	416,000	--	--
Dissolved oxygen	21	21	0	100	80	82,700	--	--
Oxidation reduction potential	15	15	0	100	44 mV	299 mV	--	--
pH measurement	217	217	0	100	6.98	8.14	--	--
Specific conductance	225	225	0	100	156 µS/cm	1,165 µS/cm	--	--
Temperature	217	217	0	100	13 °C	25.9 °C	--	--
Turbidity	217	217	0	100	0.28 NTU	15.8 NTU	--	--

-- = not applicable
BHC = benzene hexachloride
NTU = nephelometric turbity unit

Table 6-6. Summary of Groundwater Data Used for 100-IU-2/100-IU-6 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (µg/L)								
Aluminum	4	3	1	75	13.6	1,290	125	125
Antimony	7	3	4	43	42.1	51.6	3.2	32
Arsenic	1	1	0	100	10.5	10.5	--	--
Barium	7	7	0	100	32.7	167	--	--
Beryllium	7	2	5	29	0.41	0.59	0.3	4
Cadmium	7	0	7	0	--	--	0.24	4.4
Calcium	7	7	0	100	28,200	96,000	--	--
Calculated total uranium	2	2	0	100	2.85	2.98	--	--
Chromium	7	1	6	14	73.1	73.1	2.4	5.7
Cobalt	7	0	7	0	--	--	2.2	8.2
Copper	7	2	5	29	7.1	26.4	2.6	8.2
Iron	7	7	0	100	67.9	20,300	--	--
Lead	1	1	0	100	11	11	--	--
Magnesium	7	7	0	100	7,090	22,300	--	--
Manganese	7	6	1	86	5.4	898	4	4
Mercury	1	0	1	0	--	--	1	1
Nickel	7	0	7	0	--	--	4	37.5
Potassium	7	7	0	100	5,550	9,390	--	--
Selenium	1	1	0	100	2.6	2.6	--	--
Silver	7	2	5	29	6.1	16.9	1.1	5.5
Sodium	7	7	0	100	18,100	111,000	--	--
Strontium (elemental)	6	6	0	100	124	768	--	--
Uranium (inorganic)	1	1	0	100	2.21	2.21	--	--
Vanadium	7	5	2	71	11.1	24.3	3.6	12.6
Zinc	7	4	3	57	8.9	7,780	1.3	7.1
Organics (µg/L)								
1,1,1-Trichloroethane	22	0	22	0	--	--	0.035	500
1,1,2,2-Tetrachloroethane	1	0	1	0	--	--	500	500
1,1,2-Trichloroethane	22	0	22	0	--	--	0.05	500
1,1-Dichloroethane	22	0	22	0	--	--	0.046	500

Table 6-6. Summary of Groundwater Data Used for 100-IU-2/100-IU-6 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
1,1-Dichloroethene	9	0	9	0	--	--	0.045	500
1,2,4-Trichlorobenzene	1	0	1	0	--	--	770	770
1,2-Dichlorobenzene	1	0	1	0	--	--	770	770
1,2-Dichloroethane	22	0	22	0	--	--	0.08	500
1,2-Dichloroethene (total)	1	0	1	0	--	--	500	500
1,2-Dichloropropane	1	0	1	0	--	--	500	500
1,3-Dichlorobenzene	1	0	1	0	--	--	770	770
1,4-Dichlorobenzene	22	1	21	4.5	0.46	0.46	0.047	770
1,4-Dioxane	7	0	7	0	--	--	11	12
1-Butanol	21	0	21	0	--	--	2.5	14
2,4,5-Trichlorophenol	1	0	1	0	--	--	1,900	1,900
2,4,5-Trichlorophenoxyacetic acid	1	0	1	0	--	--	2.3	2.3
2,4,6-Trichlorophenol	1	0	1	0	--	--	770	770
2,4-Dichlorophenol	1	0	1	0	--	--	770	770
2,4-Dichlorophenoxyacetic acid	1	0	1	0	--	--	4.5	4.5
2,4-Dimethylphenol	1	0	1	0	--	--	770	770
2,4-Dinitrophenol	1	0	1	0	--	--	1,900	1,900
2,4-Dinitrotoluene	1	0	1	0	--	--	770	770
2,6-Dinitrotoluene	1	0	1	0	--	--	770	770
2-[2,4,5-Trichlorophenoxy]propionic acid	1	0	1	0	--	--	2.3	2.3
2-Butanone	22	0	22	0	--	--	0.1	1,000
2-Chloronaphthalene	1	0	1	0	--	--	770	770
2-Chlorophenol	1	0	1	0	--	--	770	770
2-Hexanone	1	0	1	0	--	--	1,000	1,000
2-Methylnaphthalene	1	0	1	0	--	--	770	770
2-Methylphenol [cresol, o-]	1	0	1	0	--	--	770	770
2-Nitroaniline	1	0	1	0	--	--	1,900	1,900
2-Nitrophenol	1	0	1	0	--	--	770	770
2-secButyl-4,6-dinitrophenol[DNBP]	1	0	1	0	--	--	2.3	2.3
3,3'-Dichlorobenzidine	1	0	1	0	--	--	770	770
3-Nitroaniline	1	0	1	0	--	--	1,900	1,900

Table 6-6. Summary of Groundwater Data Used for 100-IU-2/100-IU-6 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
4,6-Dinitro-2-methylphenol	1	0	1	0	--	--	1,900	1,900
4-[2,4-Dichlorophenoxy]butanoic acid	1	0	1	0	--	--	23	23
4-Bromophenylphenyl ether	1	0	1	0	--	--	770	770
4-Chloro-3-methylphenol	1	0	1	0	--	--	770	770
4-Chloroaniline	1	0	1	0	--	--	770	770
4-Chlorophenylphenyl ether	1	0	1	0	--	--	770	770
4-Methylphenol [cresol, p-]	1	0	1	0	--	--	770	770
4-Nitroaniline	1	0	1	0	--	--	1,900	1,900
4-Nitrophenol	1	0	1	0	--	--	1,900	1,900
Acenaphthene	1	0	1	0	--	--	770	770
Acenaphthylene	1	0	1	0	--	--	770	770
Acetone	22	8	14	36	0.76	4.3	0.3	1,000
Aldrin	1	0	1	0	--	--	0.22	0.22
Alpha-BHC	1	0	1	0	--	--	0.22	0.22
alpha-Chlordane	1	0	1	0	--	--	0.22	0.22
Anthracene	1	0	1	0	--	--	770	770
Aroclor-1016	1	0	1	0	--	--	4.3	4.3
Aroclor-1221	1	0	1	0	--	--	8.7	8.7
Aroclor-1232	1	0	1	0	--	--	4.3	4.3
Aroclor-1242	1	0	1	0	--	--	4.3	4.3
Aroclor-1248	1	0	1	0	--	--	4.3	4.3
Aroclor-1254	1	0	1	0	--	--	4.3	4.3
Aroclor-1260	1	0	1	0	--	--	4.3	4.3
Benzene	22	0	22	0	--	--	0.064	500
Benzo[a]anthracene	1	0	1	0	--	--	770	770
Benzo[a]pyrene	1	0	1	0	--	--	770	770
Benzo[b]fluoranthene	1	0	1	0	--	--	770	770
Benzo[ghi]perylene	1	0	1	0	--	--	770	770
Benzo[k]fluoranthene	1	0	1	0	--	--	770	770
beta-1,2,3,4,5,6-Hexachlorocyclohexane	1	0	1	0	--	--	0.22	0.22
Bis[2-chloro-1-methylethyl]ether	1	0	1	0	--	--	770	770

Table 6-6. Summary of Groundwater Data Used for 100-IU-2/100-IU-6 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Bis[2-Chloroethoxy]methane	1	0	1	0	--	--	770	770
Bis[2-chloroethyl] ether	1	0	1	0	--	--	770	770
Bis[2-ethylhexyl] phthalate	1	1	0	100	4,967	4,967	--	--
Bromodichloromethane	1	0	1	0	--	--	500	500
Bromoform	1	0	1	0	--	--	500	500
Bromomethane	1	0	1	0	--	--	1,000	1,000
Butylbenzylphthalate	1	0	1	0	--	--	770	770
Carbazole	1	0	1	0	--	--	770	770
Carbon tetrachloride	22	2	20	9.1	0.27	0.28	0.039	500
Chlorobenzene	1	0	1	0	--	--	500	500
Chloroethane	1	0	1	0	--	--	1,000	1,000
Chloroform	22	4	18	18	0.28	2.3	0.048	500
Chloromethane	1	0	1	0	--	--	1,000	1,000
Chrysene	1	0	1	0	--	--	770	770
cis-1,2-Dichloroethylene	21	0	21	0	--	--	0.048	0.24
cis-1,3-Dichloropropene	1	0	1	0	--	--	500	500
Dalapon	1	0	1	0	--	--	23	23
Delta-BHC	1	0	1	0	--	--	0.22	0.22
Dibenz[a,h]anthracene	1	0	1	0	--	--	770	770
Dibenzofuran	1	0	1	0	--	--	770	770
Dibromochloromethane	1	0	1	0	--	--	500	500
Dicamba	1	0	1	0	--	--	9.1	9.1
Dichlorodiphenyldichloroethane	1	0	1	0	--	--	0.43	0.43
Dichlorodiphenyldichloroethylene	1	0	1	0	--	--	0.43	0.43
Dichlorodiphenyltrichloroethane	1	0	1	0	--	--	0.43	0.43
Dichloroprop	1	0	1	0	--	--	23	23
Dieldrin	1	0	1	0	--	--	0.43	0.43
Diethylphthalate	1	0	1	0	--	--	770	770
Dimethyl phthalate	1	0	1	0	--	--	770	770
Di-n-butylphthalate	1	0	1	0	--	--	770	770
Di-n-octylphthalate	1	1	0	100	42.0	42.0	--	--

Table 6-6. Summary of Groundwater Data Used for 100-IU-2/100-IU-6 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Endosulfan I	1	0	1	0	--	--	0.22	0.22
Endosulfan II	1	0	1	0	--	--	0.43	0.43
Endosulfan sulfate	1	0	1	0	--	--	0.43	0.43
Endrin	1	0	1	0	--	--	0.43	0.43
Endrin aldehyde	1	0	1	0	--	--	0.43	0.43
Endrin ketone	1	0	1	0	--	--	0.43	0.43
Ethyl cyanide	21	0	21	0	--	--	0.96	2.6
Ethylbenzene	8	0	8	0	--	--	0.064	500
Fluoranthene	1	0	1	0	--	--	770	770
Fluorene	1	0	1	0	--	--	770	770
Gamma-BHC (lindane)	1	0	1	0	--	--	0.22	0.22
gamma-Chlordane	1	0	1	0	--	--	0.22	0.22
Heptachlor	1	0	1	0	--	--	0.22	0.22
Heptachlor epoxide	1	0	1	0	--	--	0.22	0.22
Hexachlorobenzene	1	0	1	0	--	--	770	770
Hexachlorobutadiene	1	0	1	0	--	--	770	770
Hexachlorocyclopentadiene	1	0	1	0	--	--	770	770
Hexachloroethane	1	0	1	0	--	--	770	770
Indeno[1,2,3-cd]pyrene	1	0	1	0	--	--	770	770
Isophorone	1	0	1	0	--	--	770	770
Methoxychlor	1	0	1	0	--	--	2.2	2.2
Methyl isobutyl ketone	22	0	22	0	--	--	0.15	1000
Methylenechloride	22	8	14	36	0.2	290	0.1	0.76
Naphthalene	1	0	1	0	--	--	770	770
Nitrobenzene	1	0	1	0	--	--	770	770
N-Nitroso-di-n-dipropylamine	1	0	1	0	--	--	770	770
N-Nitrosodiphenylamine	1	0	1	0	--	--	770	770
Oil and grease	1	1	0	100	12,300	12,300	--	--
Pentachlorophenol	1	0	1	0	--	--	1,900	1,900
Phenanthrene	1	0	1	0	--	--	770	770
Phenol	1	0	1	0	--	--	770	770

Table 6-6. Summary of Groundwater Data Used for 100-IU-2/100-IU-6 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Pyrene	1	0	1	0	--	--	770	770
Styrene	1	0	1	0	--	--	500	500
Tetrachloroethene	22	0	22	0	--	--	0.08	500
Tetrahydrofuran	16	0	16	0	--	--	1.2	2.9
Toluene	22	0	22	0	--	--	0.025	500
Total organic carbon	21	16	5	76	180	790	140	390
Total organic halides	22	7	15	32	2.9	18.3	2.2	4.3
Total petroleum hydrocarbons	1	1	0	100	4,500	4,500	--	--
Toxaphene	1	0	1	0	--	--	22	22
trans-1,2-Dichloroethylene	21	0	21	0	--	--	0.016	0.26
trans-1,3-Dichloropropene	1	0	1	0	--	--	500	500
Trichloroethene	22	0	22	0	--	--	0.037	500
Vinyl chloride	22	0	22	0	--	--	0.044	1,000
Xylenes (total)	22	0	22	0	--	--	0.13	500
Radionuclides (pCi/L)								
Antimony-125	39	0	39	0	--	--	-16.9	5.33
Beryllium-7	39	0	39	0	--	--	-53.3	38.7
Cesium-134	38	0	38	0	--	--	-5.37	3.3
Cesium-137	39	0	39	0	--	--	-2.96	4.59
Cobalt-58	1	0	1	0	--	--	1.07	1.07
Cobalt-60	39	0	39	0	--	--	-5.73	3.11
Europium-152	26	0	26	0	--	--	-6.23	6.42
Europium-154	39	0	39	0	--	--	-6.29	8.8
Europium-155	39	0	39	0	--	--	-5.48	6.85
Gross alpha	50	37	13	74	1.03	10.1	-1	1.95
Gross beta	47	47	0	100	3.03	45.8	--	--
Iodine-129	67	0	67	0	--	--	-0.152	1.92
Iron-59	1	0	1	0	--	--	0.328	0.328
Potassium-40	39	2	37	5.1	61.7	66	-70.9	213
Ruthenium-106	39	0	39	0	--	--	-27.1	20.9
Strontium-90	36	0	36	0	--	--	-0.206	0.513

Table 6-6. Summary of Groundwater Data Used for 100-IU-2/100-IU-6 Operable Unit Contaminant of Potential Concern Refinement. (7 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Technetium-99	31	22	9	71	15.3	131	-2.61	9.93
Tritium	96	64	32	67	11.5	146,000	-209	289
Uranium-233/234	2	2	0	100	1.36	1.56	--	--
Uranium-235	2	0	2	0	--	--	-0.0111	0.112
Uranium-238	2	2	0	100	0.958	0.985	--	--
Anions (µg/L)								
Carbon disulfide	22	0	22	0	--	--	0.031	500
Chloride	104	104	0	100	1,200	35,500	--	--
Cyanide	1	0	1	0	--	--	10	10
Fluoride	104	103	1	99	21	660	20	20
Nitrogen in nitrate	104	102	2	98	56.0	38,177	2.0	10.0
Nitrogen in nitrite	104	13	91	13	9.99	1,300	1.0	50.0
Sulfate	104	104	0	100	1,500	173,000	--	--
Sulfide	1	0	1	0	--	--	2,000	2,000
Other								
Alkalinity	59	59	0	100	54,000	199,000	--	--
Dissolved oxygen	30	30	0	100	860	13,600	--	--
Ignitability	1	1	0	100	54 °C	54 °C	--	--
Oxidation reduction potential	26	26	0	100	56 mV	243.1 mV	--	--
pH measurement	109	109	0	100	6.83	9.67	--	--
Specific conductance	112	112	0	100	152 µS/cm	1,161 µS/cm	--	--
Temperature	109	109	0	100	12.2 °C	22.2 °C	--	--
Turbidity	107	107	0	100	0.2 NTU	229 NTU	--	--

-- = not applicable
BHC = benzene hexachloride
NTU = nephelometric turbity unit

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Inorganics (µg/L)								
Aluminum	52	22	30	42	19.5	295	18.3	150
Antimony	108	23	85	21	0.306	74.9	0.3	45.9
Arsenic	20	17	3	85	3.5	9.6	3.4	72.3
Barium	107	107	0	100	18.2	114	--	--
Beryllium	108	3	105	2.8	0.17	2.1	0.05	4
Bismuth	10	0	10	0	--	--	6.1	6.1
Boron	10	10	0	100	28.2	43.9	--	--
Cadmium	108	0	108	0	--	--	0.1	4.2
Calcium	99	99	0	100	10,400	94,700	--	--
Calculated total uranium	90	89	1	99	0.80	273	0.25	0.25
Chromium	108	72	36	67	0.51	30.2	0.5	7.5
Cobalt	99	33	66	33	0.093	11.3	0.6	4.9
Copper	108	53	55	49	0.1	26.5	0.8	6.4
Hexavalent chromium	10	4	6	40	3	4.5	2	2
Iron	99	81	18	82	11.4	6,250	9	54.5
Lead	21	0	21	0	--	--	2.1	49.6
Lithium	11	11	0	100	4.2	8.4	--	--
Magnesium	108	108	0	100	4,410	18,300	--	--
Manganese	99	66	33	67	0.23	376	0.2	4
Mercury	10	0	10	0	--	--	0.1	0.1
Molybdenum	11	11	0	100	1.5	6.2	--	--
Nickel	108	48	60	44	0.286	37.2	1.2	15.8
Phosphorus	10	10	0	100	24.8	156	--	--
Potassium	99	99	0	100	3,030	10,200	--	--
Radium	3	0	3	0	--	--	0.0617	0.162
Selenium	11	6	5	55	3.6	5.2	3.6	3.6
Silicon	11	11	0	100	10,700	17,400	--	--
Silver	108	12	96	11	0.348	14.5	0.1	8
Sodium	99	99	0	100	12,500	59,900	--	--

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Strontium (elemental)	105	105	0	100	59.6	405	--	--
Thallium	11	2	9	18	6.6	7.5	3.7	6.4
Tin	11	1	10	9.1	10.2	10.2	2.1	5.2
Uranium (inorganic)	1,301	1,137	164	87	0.00488	322	-0.0208	20.6
Vanadium	99	68	31	69	0.262	50.8	0.2	7
Zinc	99	68	31	69	0.89	248	0.8	4
Organics (µg/L)								
[m+p]-Xylene	4	0	4	0	--	--	0.25	0.37
1,1,1,2-Tetrachloroethane	17	0	17	0	--	--	0.04	5
1,1,1-Trichloroethane	1,198	0	1,198	0	--	--	0.035	5
1,1,2,2-Tetrachloroethane	59	0	59	0	--	--	0.17	5
1,1,2-Trichloro-1,2,2-trifluoroethane	2	0	2	0	--	--	0.28	0.28
1,1,2-Trichloroethane	1,198	0	1,198	0	--	--	0.05	5
1,1-Dichloroethane	1,198	0	1,198	0	--	--	0.046	5
1,1-Dichloroethene	611	1	610	0.16	0.35	0.35	0.04	5
1,1-Dichloropropene	2	0	2	0	--	--	0.16	0.16
1,2,3-Trichlorobenzene	2	0	2	0	--	--	0.12	0.12
1,2,3-Trichloropropane	15	0	15	0	--	--	0.15	5
1,2,4,5-Tetrachlorobenzene	33	0	33	0	--	--	0.21	10
1,2,4-Trichlorobenzene	49	0	49	0	--	--	0.12	10
1,2-Dibromo-3-chloropropane	15	0	15	0	--	--	0.28	10
1,2-Dibromoethane	15	0	15	0	--	--	0.06	5
1,2-Dichlorobenzene	49	1	48	2	3	3	0.15	10
1,2-Dichloroethane	1,196	4	1,192	0.33	0.082	1	0.08	5
1,2-Dichloroethene(total)	55	3	52	5.5	12	27	0.17	5
1,2-Dichloropropane	59	0	59	0	--	--	0.16	5
1,3,5-Trimethylbenzene	2	0	2	0	--	--	0.21	0.21
1,3-Dichlorobenzene	47	0	47	0	--	--	0.13	10
1,3-Dichloropropane	2	0	2	0	--	--	0.21	0.21
1,4-Dichlorobenzene	1,227	13	1,214	1.1	0.14	0.64	0.047	10
1,4-Dioxane	517	0	517	0	--	--	2.6	500

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
1,4-Naphthoquinone	33	0	33	0	--	--	0.22	50
1-Butanol	1,022	2	1,020	0.2	5.5	15	1.1	250
1-Naphthylamine	33	0	33	0	--	--	0.4	10
2,2-Dichloropropane	2	0	2	0	--	--	0.11	0.11
2,3,4,6-Tetrachlorophenol	35	0	35	0	--	--	0.41	50
2,4,5-Trichlorophenol	46	0	46	0	--	--	0.64	26
2,4,6-Trichlorophenol	45	0	45	0	--	--	0.44	10
2,4-Dichlorophenol	83	0	83	0	--	--	0.27	10
2,4-Dimethylphenol	47	0	47	0	--	--	0.24	10
2,4-Dinitrophenol	46	0	46	0	--	--	0.97	50
2,4-Dinitrotoluene	47	0	47	0	--	--	0.48	10
2,6-Dichlorophenol	35	0	35	0	--	--	0.37	10
2,6-Dinitrotoluene	44	0	44	0	--	--	0.68	10
2-Acetylaminofluorene	33	0	33	0	--	--	0.37	100
2-Butanone	1,190	7	1,183	0.59	0.29	76	0.1	20
2-Chloroethyl vinyl ether	1	0	1	0	--	--	0.5	0.5
2-Chloronaphthalene	43	0	43	0	--	--	0.27	10
2-Chlorophenol	49	0	49	0	--	--	0.2	10
2-Chlorotoluene	2	0	2	0	--	--	0.21	0.21
2-Heptanone	1	1	0	100	15	15	--	--
2-Hexanone	57	1	56	1.8	10	10	0.14	20
2-Methylnaphthalene	44	0	44	0	--	--	0.31	10
2-Methylphenol [cresol, o-]	84	0	84	0	--	--	0.24	10
2-Naphthylamine	33	0	33	0	--	--	0.35	10
2-Nitroaniline	44	0	44	0	--	--	0.59	50
2-Nitrophenol	84	0	84	0	--	--	0.48	10
2-Picoline	72	0	72	0	--	--	0.45	20
2-secButyl-4,6-dinitrophenol [DNBP]	35	0	35	0	--	--	0.52	52
3,3'-Dichlorobenzidine	44	0	44	0	--	--	0.35	50
3,3'-Dimethylbenzidine	33	0	33	0	--	--	0.36	50

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
3+4 Methylphenol [cresol, m+p]	26	0	26	0	--	--	0.31	10
3-Methylcholanthrene	32	0	32	0	--	--	0.23	20
3-Methylphenol [cresol, m-]	1	0	1	0	--	--	10	10
3-Nitroaniline	44	0	44	0	--	--	0.5	50
4,6-Dinitro-2-methylphenol	46	0	46	0	--	--	0.53	50
4-Aminobiphenyl	33	0	33	0	--	--	0.24	50
4-Bromophenylphenyl ether	44	0	44	0	--	--	0.3	10
4-Chloro-3-methylphenol	49	0	49	0	--	--	0.37	10
4-Chloroaniline	44	0	44	0	--	--	0.28	10
4-Chlorophenylphenyl ether	44	0	44	0	--	--	0.32	10
4-Chlorotoluene	2	0	2	0	--	--	0.2	0.2
4-Methylphenol [cresol, p-]	55	0	55	0	--	--	0.69	10
4-Nitroaniline	44	0	44	0	--	--	0.84	50
4-Nitrophenol	49	0	49	0	--	--	0.48	50
4-Nitroquinoline-1-oxide	33	0	33	0	--	--	1.6	100
5-Nitro-o-toluidine	33	0	33	0	--	--	0.25	20
7,12-Dimethylbenz[a]anthracene	33	0	33	0	--	--	0.61	20
Acenaphthene	47	0	47	0	--	--	0.26	10
Acenaphthylene	44	0	44	0	--	--	0.23	10
Acetone	1,190	156	1,034	13	0.36	42	0.21	40
Acetonitrile	13	0	13	0	--	--	2.3	100
Acetophenone	33	0	33	0	--	--	0.25	10
Acrolein	13	0	13	0	--	--	1.8	100
Acrylonitrile	3	0	3	0	--	--	5	100
Aldrin	10	0	10	0	--	--	0.05	0.051
Allyl chloride	15	0	15	0	--	--	0.13	10
alpha,alpha-Dimethylphenethylamine	33	0	33	0	--	--	10	50
Alpha-BHC	10	0	10	0	--	--	0.05	0.051
alpha-Chlordane	10	0	10	0	--	--	0.05	0.051
Aniline	31	0	31	0	--	--	0.28	10

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Anthracene	44	0	44	0	--	--	0.39	10
Aramite	30	0	30	0	--	--	1	21
Aroclor-1016	19	0	19	0	--	--	0.08	0.41
Aroclor-1221	19	0	19	0	--	--	0.08	0.41
Aroclor-1232	19	0	19	0	--	--	0.08	0.41
Aroclor-1242	19	0	19	0	--	--	0.08	0.41
Aroclor-1248	19	0	19	0	--	--	0.08	0.41
Aroclor-1254	19	0	19	0	--	--	0.03	0.41
Aroclor-1260	19	0	19	0	--	--	0.03	0.41
Azobenzene	21	0	21	0	--	--	0.26	2.1
Benzene	1,192	2	1,190	0.17	0.073	0.2	0.05	5
Benzo[a]anthracene	44	0	44	0	--	--	0.13	10
Benzo[a]pyrene	53	0	53	0	--	--	0.34	10
Benzo[b]fluoranthene	44	0	44	0	--	--	0.37	10
Benzo[ghi]perylene	44	1	43	2.3	1.047	1.047	0.35	10
Benzo[k]fluoranthene	44	0	44	0	--	--	0.39	10
Benzoic acid	1	0	1	0	--	--	26	26
Benzothiazole	39	0	39	0	--	--	0.4	10
Benzyl alcohol	31	1	30	3.2	2.7	2.7	0.26	10
beta-1,2,3,4,5,6-Hexachlorocyclohexane	10	0	10	0	--	--	0.05	0.051
Bis[2-chloro-1-methylethyl]ether	44	0	44	0	--	--	0.26	10
Bis[2-Chloroethoxy]methane	44	0	44	0	--	--	0.3	10
Bis[2-chloroethyl] ether	44	0	44	0	--	--	0.25	10
Bis[2-ethylhexyl] phthalate	82	12	70	15	1.4	6.9	0.43	15.974
Bromobenzene	2	0	2	0	--	--	0.25	0.25
Bromochloromethane	2	0	2	0	--	--	0.17	0.17
Bromodichloromethane	59	0	59	0	--	--	0.14	5
Bromoform	59	0	59	0	--	--	0.2	5
Bromomethane	59	0	59	0	--	--	0.23	10
Butylbenzylphthalate	44	0	44	0	--	--	0.48	10

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Carbazole	13	0	13	0	--	--	1.4	10
Carbon tetrachloride	1,198	45	1,153	3.8	0.11	5.6	0.039	5
Chlorobenzene	136	1	135	0.74	0.41	0.41	0.08	5
Chlorobenzilate	33	0	33	0	--	--	0.29	10
Chloroethane	59	0	59	0	--	--	0.16	10
Chloroform	1,198	149	1,049	12	0.071	4.6	0.048	5
Chloromethane	59	2	57	3.4	1.4	1.4	0.16	10
Chloroprene	13	0	13	0	--	--	0.11	5
Chrysene	53	0	53	0	--	--	0.14	10
cis-1,2-Dichloroethylene	1,155	248	907	21	0.084	280	0.048	15
cis-1,3-Dichloropropene	59	0	59	0	--	--	0.11	5
Cyclohexanone	2	0	2	0	--	--	2.9	2.9
Delta-BHC	10	0	10	0	--	--	0.05	0.051
Diallate	33	0	33	0	--	--	1	20
Dibenz[a,h]anthracene	44	0	44	0	--	--	0.35	10
Dibenzofuran	44	0	44	0	--	--	0.3	10
Dibromochloromethane	59	0	59	0	--	--	0.07	5
Dibromomethane	15	0	15	0	--	--	0.12	5
Dichlorodifluoromethane	16	0	16	0	--	--	0.13	10
Dichlorodiphenyldichloroethane	10	0	10	0	--	--	0.05	0.051
Dichlorodiphenyldichloroethylene	10	0	10	0	--	--	0.05	0.051
Dichlorodiphenyltrichloroethane	10	0	10	0	--	--	0.05	0.051
Dieldrin	10	0	10	0	--	--	0.05	0.051
Diethylphthalate	44	0	44	0	--	--	0.13	10
Dimethoate	32	0	32	0	--	--	0.24	20
Dimethyl phthalate	44	0	44	0	--	--	0.27	10
Di-n-butylphthalate	44	8	36	18	0.559	3	0.14	10
Di-n-octylphthalate	44	0	44	0	--	--	1.2	10
Diphenylamine	1	0	1	0	--	--	10	10
Disulfoton	32	0	32	0	--	--	0.25	50

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Endosulfan I	10	0	10	0	--	--	0.05	0.051
Endosulfan II	10	0	10	0	--	--	0.05	0.051
Endosulfan sulfate	10	0	10	0	--	--	0.05	0.051
Endrin	10	0	10	0	--	--	0.05	0.051
Endrin aldehyde	10	0	10	0	--	--	0.05	0.051
Endrin ketone	10	0	10	0	--	--	0.05	0.051
Ethyl cyanide	1,148	0	1,148	0	--	--	0.88	100
Ethyl methacrylate	14	0	14	0	--	--	0.09	10
Ethyl methanesulfonate	33	0	33	0	--	--	0.28	10
Ethylbenzene	755	0	755	0	--	--	0.064	5
Famphur	32	0	32	0	--	--	1.1	100
Fluoranthene	44	0	44	0	--	--	0.32	10
Fluorene	44	0	44	0	--	--	0.31	10
Gamma-BHC (Lindane)	10	0	10	0	--	--	0.05	0.051
gamma-Chlordane	10	0	10	0	--	--	0.05	0.051
Heptachlor	10	0	10	0	--	--	0.05	0.051
Heptachlor epoxide	10	0	10	0	--	--	0.05	0.051
Hexachlorobenzene	44	0	44	0	--	--	0.28	10
Hexachlorobutadiene	46	0	46	0	--	--	0.29	10
Hexachlorocyclopentadiene	44	0	44	0	--	--	0.7	50
Hexachloroethane	44	0	44	0	--	--	0.24	10
Hexachlorophene	32	0	32	0	--	--	1.7	100
Hexachloropropene	33	0	33	0	--	--	0.64	100
Hexane	2	0	2	0	--	--	0.21	0.21
Hydrazobenzene	1	0	1	0	--	--	10	10
Indeno[1,2,3-cd]pyrene	44	0	44	0	--	--	0.48	10
Iodomethane	13	0	13	0	--	--	0.09	5
Isobutyl alcohol	11	0	11	0	--	--	8.1	200
Isodrin	32	0	32	0	--	--	0.21	10
Isophorone	44	0	44	0	--	--	0.23	10
Isopropylbenzene	2	0	2	0	--	--	0.21	0.21

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Isosafrole	33	0	33	0	--	--	0.98	20
Kepone	32	0	32	0	--	--	2.3	100
m-Dinitrobenzene	33	0	33	0	--	--	0.34	10
Methacrylonitrile	13	0	13	0	--	--	0.95	100
Methanol	3	1	2	33	1,100	1,100	1,000	1,000
Methapyrilene	33	0	33	0	--	--	0.92	50
Methoxychlor	10	0	10	0	--	--	0.05	0.051
Methyl isobutyl ketone	1,190	6	1,184	0.5	0.2	38	0.1	20
Methyl methacrylate	14	0	14	0	--	--	0.23	10
Methyl methanesulfonate	33	0	33	0	--	--	0.69	10
Methyl parathion	32	0	32	0	--	--	0.76	50
Methyl tert-butyl ether	2	0	2	0	--	--	0.32	0.32
Methylenechloride	1,198	179	1,019	15	0.2	10	0.1	5
m-Xylene	1	0	1	0	--	--	5	5
Naphthalene	84	0	84	0	--	--	0.25	10
n-Butylbenzene	2	0	2	0	--	--	0.087	0.087
Nitrobenzene	44	1	43	2.3	1	1	0.13	10
Nitrosopyrrolidine	33	0	33	0	--	--	0.42	10
N-Nitrosodiethylamine	33	0	33	0	--	--	0.44	10
N-Nitrosodimethylamine	31	0	31	0	--	--	0.46	10
N-Nitrosodi-n-butylamine	33	0	33	0	--	--	0.21	10
N-Nitroso-di-n-dipropylamine	47	0	47	0	--	--	0.31	10
N-Nitrosodiphenylamine	44	0	44	0	--	--	0.23	10
N-Nitrosomethylethylamine	33	0	33	0	--	--	0.74	10
N-Nitrosomorpholine	33	0	33	0	--	--	0.36	10
N-Nitrosopiperidine	33	0	33	0	--	--	0.24	52
n-Propylbenzene	2	0	2	0	--	--	0.21	0.21
Oil and grease	25	5	20	20	2,700	5,500	700	5,000
O,O,O-Triethyl phosphorothioate	32	0	32	0	--	--	0.38	50
O,O-Diethyl O-2-pyrazinyl phosphorothioate	32	0	32	0	--	--	0.32	50

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
o-Toluidine	33	0	33	0	--	--	0.28	20
o-Xylene	5	0	5	0	--	--	0.21	5
Parathion	32	0	32	0	--	--	0.25	50
p-Cymene	2	0	2	0	--	--	0.18	0.18
p-Dimethylaminoazobenzene	33	0	33	0	--	--	0.24	20
Pentachlorobenzene	33	0	33	0	--	--	0.23	10
Pentachloroethane	30	0	30	0	--	--	0.42	10
Pentachloronitrobenzene [PCNB]	33	0	33	0	--	--	0.26	52
Pentachlorophenol	84	0	84	0	--	--	0.58	50
Phenacetin	33	0	33	0	--	--	0.35	20
Phenanthrene	44	0	44	0	--	--	0.12	10
Phenol	84	0	84	0	--	--	0.26	10
Phorate	32	0	32	0	--	--	0.2	50
p-Phenylenediamine	33	0	33	0	--	--	0.51	100
Pronamide	33	0	33	0	--	--	0.33	20
Pyrene	47	0	47	0	--	--	0.3	10
Pyridine	31	0	31	0	--	--	1.7	20
Safrol	33	0	33	0	--	--	0.2	20
sec-Butylbenzene	2	0	2	0	--	--	0.2	0.2
Styrene	57	0	57	0	--	--	0.07	5
sym-Trinitrobenzene	33	0	33	0	--	--	0.53	50
tert-Butylbenzene	2	0	2	0	--	--	0.24	0.24
Tetrachloroethene	1,198	123	1,075	10	0.12	38	0.08	5.7
Tetraethyl dithiopyrophosphate	32	0	32	0	--	--	0.24	50
Tetrahydrofuran	1,059	1	1,058	0.094	3.6	3.6	1.2	17
Toluene	1,192	9	1,183	0.76	0.082	1.6	0.025	5
Total organic carbon	14	8	6	57	290	1,700	140	470
Total organic halides	8	2	6	25	3.9	6.4	2.38	4.3
Total petroleum hydrocarbons	1	0	1	0	--	--	0.485	0.485
Total petroleum hydrocarbons-diesel range	43	0	43	0	--	--	50	8,570,000

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Total petroleum hydrocarbons-gasoline range	43	0	43	0	--	--	0.0079	40,000
Total petroleum hydrocarbons-kerosene range	3	0	3	0	--	--	7,500,000	8,570,000
Total cresols	2	0	2	0	--	--	0.95	0.95
Toxaphene	10	0	10	0	--	--	0.5	0.51
trans-1,2-Dichloroethylene	1,154	54	1,100	4.7	0.12	1.9	0.016	5
trans-1,3-Dichloropropene	59	0	59	0	--	--	0.05	5
trans-1,4-dichloro-2-butene	15	0	15	0	--	--	0.22	20
Tributyl phosphate	72	26	46	36	2.6	720	0.22	21
Trichloroethene	1,198	566	632	47	0.12	630	0.037	5
Trichloromonofluoromethane	17	0	17	0	--	--	0.19	10
Tridecane	1	0	1	0	--	--	10	10
Tris-2-chloroethyl phosphate	39	0	39	0	--	--	0.24	10
Vinyl acetate	13	0	13	0	--	--	0.2	10
Vinyl chloride	1,198	4	1,194	0.33	0.3	13	0.044	10
Xylenes (total)	1,189	3	1,186	0.25	0.32	10	0.13	6.1
Radionuclides (pCi/L)								
Americium-241	10	0	10	0	--	--	54	220
Antimony-125	150	0	150	0	--	--	-11.4	62
Beryllium-7	146	0	146	0	--	--	-29.7	270
Carbon-14	11	5	6	45	9.19	15.2	-20.2	19.7
Cesium-134	150	0	150	0	--	--	-9.7	71
Cesium-137	157	0	157	0	--	--	-3.41	38
Cobalt-58	5	0	5	0	--	--	-2.33	2.74
Cobalt-60	157	0	157	0	--	--	-2.39	28
Europium-152	118	0	118	0	--	--	-12	68
Europium-154	157	0	157	0	--	--	-9.23	81
Europium-155	157	0	157	0	--	--	-8.2	100
Gross alpha	473	405	68	86	0.869	154	-1.1	9.1
Gross beta	451	448	3	99	3.13	282	0.76	12

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Iodine-129	70	1	69	1.4	18.6	18.6	-10.2	0.719
Iron-59	5	0	5	0	--	--	-10.2	8.74
Nickel-63	13	5	8	38	4.07	8.93	-4.03	17.9
Plutonium-238	15	0	15	0	--	--	-0.00899	0.0559
Plutonium-239/240	15	0	15	0	--	--	-0.0224	0
Potassium-40	150	1	149	0.67	53.9	53.9	-183	4,100
Radium-226	10	0	10	0	--	--	-0.402	0.152
Radium-228	10	0	10	0	--	--	-0.421	0.615
Ruthenium-106	146	0	146	0	--	--	-44	230
Silver-108 metastable	2	0	2	0	--	--	9.5	12
Strontium-90	58	20	38	34	1.03	4.11	-0.192	0.504
Technetium-99	83	70	13	84	10.2	319	-5.68	8.87
Thorium-228	10	0	10	0	--	--	-0.051	0.052
Thorium-230	10	0	10	0	--	--	-0.078	0
Thorium-232	10	0	10	0	--	--	-0.021	0.051
Tritium	599	502	97	84	0.03	8,380,000	-95.7	339
Uranium-233/234	90	89	1	99	0.3	108	0.165	0.165
Uranium-235	90	76	14	84	0.0297	5.31	-0.00351	0.175
Uranium-238	94	92	2	98	0.13	90.8	0.042	0.0843
Anions (µg/L)								
Bromide	12	0	12	0	--	--	250	1,200
Carbon disulfide	1,190	16	1,174	1.3	0.14	18	0.031	5
Chloride	682	682	0	100	1,300	61,400	--	--
Cyanide	2	0	2	0	--	--	5	5
Fluoride	682	666	16	98	107	2,700	12	2,500
Nitrogen in nitrate	682	646	36	95	6.0	30,270	2.0	11.0
Nitrogen in nitrite	682	76	606	11	13.0	999	1.0	381
Phosphate	10	0	10	0	--	--	250	250
Phosphorous in phosphate	8	1	7	13	123	123	11.4	391
Sulfate	682	652	30	96	74	87,500	41	140
Sulfide	2	0	2	0	--	--	1,000	1,000

Table 6-7. Summary of Groundwater Data Used for 300-FF-5 Operable Unit Contaminant of Potential Concern Refinement. (12 Pages)

Analyte	Number of Samples	Number of Detects	Number of Nondetects	Detect Frequency	Minimum Detect	Maximum Detect	Minimum Nondetect	Maximum Nondetect
Other								
Alkalinity	659	658	1	100	60,000	200,000	1,200	1,200
Dissolved oxygen	432	432	0	100	6	85,700	--	--
Oxidation reduction potential	404	404	0	100	-367 mV	493 mV	--	--
pH measurement	1,393	1,393	0	100	6.67	9.65	--	--
Specific conductance	1,480	1,480	0	100	92.4 µS/cm	1,261 µS/cm	--	--
Temperature	1,394	1,394	0	100	9.6 °C	38.4 °C	--	--
Turbidity	1,391	1,391	0	100	0.08 NTU	1,000 NTU	--	--

-- = not applicable
BHC = benzene hexachloride
NTU = nephelometric turbity unit

Table 6-8. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-BC-5 Groundwater Data. (2 Pages)

Analyte	COPC	Explanation
Inorganics		
Aluminum	No	The range of concentrations in individual wells is approximately equivalent to that across different wells and different OUs.
Antimony	No	The range of detect and nondetect values is comparable among all seven OUs.
Barium	Yes	The range of barium concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, barium is identified as a groundwater COPC. However, barium concentrations were statistically consistent with background in shallow and deep zone soil in all decision areas, and groundwater values may have little relationship to Hanford Site operations.
Beryllium	No	The detected values are within the range of nondetect values in the sampled wells.
Calcium	No	Exclusion list analyte; essential nutrient.
Chromium	Yes	Inclusion list analyte.
Cobalt	No	The range of detects is within the range of nondetect concentrations.
Copper	No	With the exception of two outlier values at 100-HR-3 and 100-NR-2, the distribution of copper results is consistent among all groundwater OUs.
Hexavalent chromium	Yes	Inclusion list analyte.
Iron	No	The range of iron concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs excluding 100-BC-5 and 100-FR-3.
Magnesium	No	Exclusion list analyte; essential nutrient.
Manganese	Yes	The range of manganese concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, manganese is identified as a groundwater COPC.
Nickel	No	Detected concentrations in these wells are within the range of nondetect values.
Potassium	No	Exclusion list analyte; essential nutrient.
Silver	No	Low detect frequency. Values comparable to all other OUs.
Sodium	No	Exclusion list analyte; essential nutrient.
Strontium (elemental)	Yes	The range of concentrations is wide at each OU, and both the 50th percentile and inner quartiles of the box plots vary among the different OUs. In the absence of background data, and because strontium-90 is on the groundwater inclusion list, strontium is identified as a groundwater COPC.
Vanadium	No	The range of concentrations, and the inner quartile of the box plots, are approximately equivalent in all OUs.
Zinc	Yes	The range of zinc concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, zinc is identified as a groundwater COPC.

Table 6-8. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-BC-5 Groundwater Data. (2 Pages)

Analyte	COPC	Explanation
Organics		
Chloroform	Uncertain	Detects of 0.3(J) to 0.6(J) are at well 199-B9-2; higher than the detection limit of 0.17 µg/L. Potentially present, but inadequate data to support risk calculations.
Methylenechloride	No	Detected in 1998 at 2(BJ) µg/L; no other samples at this well and detection limits commonly 0.4 to 0.6 µg/L. 1998 result of 3(J) µg/L in well 199-B9-2 followed by two nondetects in 2000 and 2001. Not present at concentrations above detection limits in other wells.
Trichloroethene	Yes	Inclusion list analyte. Present in three of the four wells sampled at concentrations of 1 to 2 µg/L. Exposure concentrations will not be representative of the 24 wells in the 100-BC-5 OU.
Radionuclides		
Gross alpha	No	No toxicity data; specific alpha-emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Gross beta	No	No toxicity data; specific beta-emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Strontium-90	Yes	Inclusion list analyte.
Technetium-99	Yes	Inclusion list analyte. Data available for only 3 of 24 wells in the 100-B/C Area. Exposure concentrations will not be representative of the 24 wells in the 100-BC-5 OU.
Tritium	Yes	Inclusion list analyte.
Anions		
Alkalinity	No	Exclusion list analyte; water quality parameter.
Chloride	No	A major anion analyzed as a water quality parameter.
Dissolved oxygen	No	Exclusion list analyte; water quality parameter.
Fluoride	No	The distribution of results is approximately equivalent in 100-BC-5, 100-FR-3, 100-HR-3, 100-KR-4, and 100-F/100-IU-2/100-IU-6.
Nitrogen in nitrate	Yes	High detection frequency and large sample size. Broad range of detected values.
Nitrogen in nitrite	No	100% detection for N in nitrate; that analyte used to evaluate nitrate and nitrite.
Oxidation reduction potential	No	Exclusion list analyte; water quality parameter.
Specific conductance	No	Exclusion list analyte; water quality parameter.
Sulfate	No	No toxicity data; a major anion analyzed as a water quality parameter.
Temperature	No	Exclusion list analyte; water quality parameter.
Turbidity	No	Exclusion list analyte; water quality parameter.
Other		
pH measurement	No	Exclusion list analyte; water quality parameter.

COPC = contaminant of potential concern
OU = operable unit

Table 6-9. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-KR-4 Groundwater Data. (3 Pages)

Analyte	COPC	Explanation
Inorganics		
Aluminum	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Antimony	No	The range of detect and nondetect values is comparable among all seven OUs.
Arsenic	No	The data distribution is similar to that observed in other OUs.
Barium	Yes	The range of barium concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, barium is identified as a groundwater COPC. However, barium concentrations were statistically consistent with background in shallow and deep zone soil in all decision areas; groundwater values may have little relationship to Hanford Site operations.
Beryllium	No	The detected values are within the range of nondetect values in the sampled wells.
Boron	No	The range of concentrations in all groundwater OUs are approximately identical, with the exception of the two outlier values at 100-FR-3.
Cadmium	No	The detected values are within the range of nondetect values in the sampled wells.
Calcium	No	Exclusion list analyte; essential nutrient.
Calculated total uranium	No	There are more complete results available for uranium (inorganic).
Chromium	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Cobalt	Uncertain	In each well where concentrations above the range of nondetects were measured (199-K-106A, 199-K-107A, 199-K-30, 199-K-36, 699-73-61) there are numerous nondetect values. In many cases, however, the single high detection is from the most recent sampling event (October 2007).
Copper	No	With the exception of two outlier values at 100-HR-3 and 100-NR-2, the distribution of copper results is consistent among all groundwater OUs.
Hexavalent chromium	Yes	Inclusion list analyte.
Iron	Yes	The range of iron concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs excluding 100-BC-5 and 100-FR-3. In the absence of groundwater background, iron is identified as a groundwater COPC in this OU.
Lead	No	No toxicity data for lead. The range of detected concentrations (0.059 to 7.5 µg/L) is below the EPA action level of 15 µg/L.
Lithium	No	No toxicity data. Unlikely to be site-related: concentrations in cleanup verification shallow zone soil data are within the range observed in reference area and area background data sets.
Magnesium	No	Exclusion list analyte; essential nutrient.
Manganese	Yes	The range of manganese concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, manganese is identified as a groundwater COPC.
Mercury	No	The single detected value of 0.12 µg/L is approximately equal to the common detection limit of 0.1 µg/L.
Molybdenum	No	The range of sample results is consistent among 100-FR-3, 100-KR-4, 300-FF-5, and (excepting two outliers), 100-HR-3 and 100-NR-2.
Nickel	Yes	Results at a number of wells are elevated with respect to most other wells in this and other OUs. These include 199-K-109A, 199-K-110A, 199-K-23, 199-K-32B, and 199-K-36.

Table 6-9. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-KR-4 Groundwater Data. (3 Pages)

Analyte	COPC	Explanation
Phosphorus	No	Phosphorus is an essential nutrient.
Potassium	No	Exclusion list analyte; essential nutrient.
Selenium	No	Range of detected (2.6 to 5.3 µg/L) and nondetect concentrations (3.5 to 4.7) from all OUs are equivalent.
Silicon	No	Exclusion list analyte.
Silver	Yes	Possible bimodal distribution. All values above 20 µg/L in either 100-HR-3 or 100-KR-4. Values in other OUs range up to approximately 15 µg/L.
Sodium	No	Exclusion list analyte; essential nutrient.
Strontium (elemental)	Yes	The range of concentrations is wide at each OU, and both the 50th percentile and inner quartiles of the box plots vary among the different OUs. In the absence of background data, and because strontium-90 is on the groundwater inclusion list, strontium is identified as a groundwater COPC.
Uranium (inorganic)	Yes	Inclusion list analyte.
Vanadium	No	The range of concentrations, and the inner quartile of the box plots, are approximately equivalent in all OUs.
Zinc	Yes	The range of zinc concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, zinc is identified as a groundwater COPC.
Organics		
1,4-Dichlorobenzene	No	The single detected value of 0.3(BJ) µg/L is within the range of detection limits.
Acetone	No	Detected in 2 of 20 samples; detected values (1.3 and 1.6 µg/L) within the range of common detection limits.
Aroclor-1260	No	The single detect at 0.054(J) µg/L is well below the usual detection limits of 0.4 µg/L or higher.
Bis[2-ethylhexyl] phthalate	No	A common lab contaminant with estimate detected values within or near the range of common detection limits. The range of detected values is approximately 1(J) to 2(J) µg/L, with one detect of 5(J) µg/L, and a single nondetect of 10 µg/L. The range of nondetects at 300-FF-5 is mostly between 1 and 4 µg/L, with a few higher outlying nondetects.
Carbon tetrachloride	No	The single detected value of 1.0(J) µg/L is within the range of detection limits.
Chloroform	Uncertain	Highest detects of 1(J) and 2(J) are from 1998 in wells with no other samples. Detects at other wells within range of nondetect values. Uncertain COPC status based on 1998 detections.
cis-1,2-Dichloroethylene	No	Detected in 2 of 20 samples; detected values (0.24 and 0.6 µg/L) within the range of detection limits.
Di-n-butylphthalate	No	A common lab contaminant with estimate detected values within or near the range of common detection limits. The range of detected values (0.7(J) to 3(JB) µg/L) is less than the nondetect values of 10 µg/L.
Heptachlor epoxide	Uncertain	The detected values (0.18, 0.35, 1.1 µg/L) are all above the common detection limit of 0.05 µg/L, with the maximum value about 20x higher than this detection limit. Uncertain COPC status: Inadequate data to calculate an exposure concentration.
Methylenechloride	Uncertain	Most data are at well 199-K-106A, with records from 1998 to 2008. Highest detected values (up to 8.9(B) µg/L) from the most recent sampling events.
Trichloroethene	Yes	Present at concentrations well above detection limits; adequate data for risk calculations.
Radionuclides		
Carbon-14	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.

Table 6-9. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-KR-4 Groundwater Data. (3 Pages)

Analyte	COPC	Explanation
Gross alpha	No	No toxicity data; specific alpha-emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Gross beta	No	No toxicity data; specific beta-emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Potassium-40	No	Exclusion list analyte; background radionuclide.
Radium-226	No	Exclusion list analyte; background radionuclide.
Radium-228	No	Exclusion list analyte; background radionuclide.
Strontium-90	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Technetium-99	Yes	Inclusion list analyte.
Thorium-228	No	Exclusion list analyte; background radionuclide.
Thorium-232	No	Exclusion list analyte; background radionuclide.
Tritium	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Uranium-233/234	Yes	Inclusion list analyte.
Uranium-235	No	Low detection frequency and similar range of concentrations in 100-FR-3, 100-HR-3, and 100-KR-4.
Uranium-238	Yes	Inclusion list analyte.
Anions		
Alkalinity	No	Exclusion list analyte; water quality parameter.
Bromide	No	Naturally-occurring anion in surface and groundwater. No toxicity data.
Chloride	No	A major anion analyzed as a water quality parameter.
Coliform bacteria	No	Exclusion list analyte; water quality parameter.
Dissolved oxygen	No	Exclusion list analyte; water quality parameter.
Fluoride	No	The distribution of results is approximately equivalent in 100-BC-5, 100-FR-3, 100-HR-3, 100-KR-4, and 100-F/100-IU-2/100-IU-6.
Hardness	No	Exclusion list analyte; water quality parameter.
Nitrogen in nitrate	Yes	High detection frequency and large sample size. Broad range of detected values.
Nitrogen in nitrite	Yes	Detect frequency about 10%. Adequate number of detects to support risk calculations.
Oxidation reduction potential	No	Exclusion list analyte; water quality parameter.
Phosphorous in phosphate	No	Phosphorus is an essential nutrient. As phosphoric acid in solution it is used in the food industry for acidifying soft drinks and other foods.
Specific conductance	No	Exclusion list analyte; water quality parameter.
Sulfate	No	No toxicity data; a major anion analyzed as a water quality parameter.
Temperature	No	Exclusion list analyte; water quality parameter.
Total inorganic carbon	No	Exclusion list analyte; water quality parameter.
Total organic carbon	No	Exclusion list analyte; water quality parameter.
Turbidity	No	Exclusion list analyte; water quality parameter.
Other		
pH measurement	No	Exclusion list analyte; water quality parameter.

COPC = contaminant of potential concern
EPA = U.S. Environmental Protection Agency
OU = operable unit

Table 6-10. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-NR-2 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
Inorganics		
Aluminum	No	The range of concentrations in individual wells is approximately equivalent to that across different wells and different OUs.
Antimony	No	The range of detect and nondetect values is comparable among all seven OUs.
Arsenic	Uncertain	The value of 13.8 µg/L at well 199-N-26 is the only sample at that well. It is about twice the common detection limit of 6 µg/L.
Barium	Yes	The range of barium concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, barium is identified as a groundwater COPC. However, barium concentrations were statistically consistent with background in shallow and deep zone soil in all decision areas, and groundwater values may have little relationship to Hanford operations.
Beryllium	No	The detected values are within the range of nondetect values in the sampled wells.
Boron	No	The range of concentrations in all groundwater OUs are approximately identical, with the exception of the two outlier values at 100-FR-3.
Cadmium	No	The detected values are within the range of nondetect values in the sampled wells.
Calcium	No	Exclusion list analyte; essential nutrient.
Calculated total uranium	Yes	The detection frequency for calculated total uranium is better than that for uranium (inorganic).
Chromium	Yes	Inclusion list analyte.
Cobalt	No	The single detection (11.3(C) µg/L) outside the range of nondetect values is from September 2007 at well 399-3-21. There are eight other samples from 2007 and 2008 at this well, and all are either nondetect or within the range of detection limits.
Copper	Uncertain	With the exception of two outlier values at 100-HR-3 and 100-NR-2, the distribution of copper results is consistent among all groundwater OUs. The high value of 90.2(C) µg/L is the only sample at well 199-N-26. The value of 39.8 µg/L is one of three samples 199-N-67; the others are 2.2(U) and 4.4(B) µg/L, but the high value is most recent.
Hexavalent chromium	Yes	Inclusion list analyte. Detected in 5 of the 16 wells sampled; only 1 sample per well where detected. Detected concentrations clearly elevated. Exposure concentrations will not be generally applicable to 100-NR-2.
Iron	Yes	The range of iron concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs excluding 100-BC-5 and 100-FR-3. Iron was identified in the 2006 Groundwater Monitoring Report as being elevated in groundwater in the 100-N OU, possibly due to reducing conditions from petroleum. In the absence of groundwater background, iron is identified as a groundwater COPC in this OU.
Lithium	No	No toxicity data. Unlikely to be site related: concentrations in cleanup verification shallow zone soil data are within the range observed in Reference Area and Area Background data sets.
Magnesium	No	Exclusion list analyte; essential nutrient.
Manganese	Yes	The range of manganese concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, manganese is identified as a groundwater COPC. Manganese was identified in the 2006 Groundwater Monitoring Report as being elevated in groundwater in the 100-N OU, possibly due to reducing conditions from petroleum.
Molybdenum	Uncertain	The two highest values (14.2 and 28 µg/L) are the only samples from these wells. About 30% of the detection limit values for molybdenum in this OU are 11 µg/L.
Nickel	Yes	The two highest results (112 and 665 µg/L) are far above other values and are the only samples from these two wells.

Table 6-10. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-NR-2 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
Phosphorus	No	Phosphorus is an essential nutrient.
Potassium	No	Exclusion list analyte; essential nutrient.
Selenium	No	Range of detected (2.6 to 5.3 µg/L) and nondetect concentrations (3.5 to 4.7) from all OUs are equivalent.
Silicon	No	Exclusion list analyte.
Silver	No	Small sample size. Values comparable to all other OUs.
Sodium	No	Exclusion list analyte; essential nutrient.
Strontium (elemental)	Yes	The range of concentrations is wide at each OU, and both the 50th percentile and inner quartiles of the box plots vary a lot among the different OUs. In the absence of background data, and because strontium-90 is on the groundwater inclusion list, strontium is identified as a groundwater COPC.
Thallium	No	Detected values in 100-HR-3, 100-NR-2, and 300-FF-5 are comparable. Detected values only slightly elevated relative to detection limits.
Tin	No	Detected value of 10.7 µg/L is equal to nondetect value of 10.7 µg/L in nine samples from this OU.
Titanium	No	No toxicity data; used in food products and cosmetics.
Uranium (inorganic)	No	The detection frequency for calculated total uranium is higher than that for uranium (inorganic).
Vanadium	No	The range of concentrations, and the inner quartile of the box plots, are approximately equivalent in all OUs.
Zinc	Yes	The range of zinc concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, zinc is identified as a groundwater COPC.
Organics		
2-Methylnaphthalene	No	The single detected value of 2(J) µg/L is below the detection limit (10 µg/L) in other 100-NR-2 samples. 10 µg/L is the most common detection limit in other OUs, with few U-qualified values at 1 µg/L or less.
Acetone	No	The range of detected values (1(J) to 3.1(JB) µg/L) is only slightly elevated compared to the range of nondetect values (0.33 to 1.9 µg/L).
Aldrin	No	The single detected value of 0.11(D) µg/L is about a factor of 2 higher than the common detection limit.
Alpha-BHC	No	The single detected value of 0.037(JDX) µg/L is less than the range of detection limits.
Benzene	Uncertain	The single detected value of 0.95(J) µg/L is above all but one detection limit the detection limit for the eight ND samples. Uncertain COPC status: Inadequate data to calculate an exposure concentration.
Bis[2-ethylhexyl] phthalate	No	A common lab contaminant with estimate detected values within or near the range of common detection limits. The range of detected values (0.7(J) to 2.9(J) µg/L) is less than the common nondetect value of 10 µg/L at 100-NR-2 and also within the range of nondetects at 300-FF-5.
Chloroform	Uncertain	Detected values (1 to 1.9 µg/L) are 10 to 20 times higher than nondetect values in the wells where detections occurred. Uncertain COPC status: inadequate data to calculate an exposure concentration.
Delta-BHC	No	The single detected value of 0.2(D) µg/L is about a factor of 4 or 5 higher than the common detection limit.
DDD	Uncertain	DDD and DDT were both detected in a single sample at wells 199-N-16 and 199-N-28 at concentrations above usual detection limits. Uncertain COPC status: inadequate data to calculate an exposure concentration.

Table 6-10. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-NR-2 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
DDT	Uncertain	DDD and DDT were both detected in a single sample at wells 199-N-16 and 199-N-28 at concentrations above usual detection limits. Uncertain COPC status: inadequate data to calculate an exposure concentration.
Dieldrin	No	The single detected value of 0.024 (JD) µg/L is less than the range of detection limits.
Di-n-butylphthalate	No	The detected values (0.5 to 1.3 µg/L) are well below the common detection limit of 10 µg/L.
Endosulfan sulfate	No	Detected in 2 of 15 samples; detected values (0.32 and 0.054 µg/L) within the range of detection limits.
Endrin	No	The detected values of about 0.13 µg/L are about a factor of 3 higher than the average detection limit of 0.05 µg/L.
Endrin aldehyde	No	The single detected value of 0.015(J) µg/L is less than the range of detection limits.
Endrin ketone	No	The detected values (max of 0.044(J)) µg/L are less than the range of detection limits.
Ethylbenzene	Uncertain	The single detected value of 3.9(J) µg/L is above the common detection limit of 0.24 µg/L. Uncertain COPC status: inadequate data to calculate an exposure concentration.
gamma-Chlordane	Uncertain	Detection at well 199-N-16 of 0.5 µg/L about 10 times the average detection limit. No other data for this well. Uncertain COPC status: Inadequate data to calculate an exposure concentration.
Heptachlor	Uncertain	Heptachlor and heptachlor epoxide detected in a single sample at wells 199-N-16 and 199-N-28 at concentrations above usual detection limits. Uncertain COPC status: Inadequate data to calculate an exposure concentration.
Heptachlor epoxide	Uncertain	Heptachlor and heptachlor epoxide detected in a single sample at wells 199-N-16 and 199-N-28 at concentrations above usual detection limits. Uncertain COPC status: inadequate data to calculate an exposure concentration.
Methoxychlor	No	Detected in 2 of 15 samples; detected values (0.02 and 0.055 µg/L) within the range of detection limits.
Methylenechloride	No	Detected concentrations (0.26 to 0.86 µg/L) are within the range of nondetect values.
Oil and grease	No	No toxicity data; specific components of petroleum products are evaluated via chemical-specific slope factors and hazard quotients.
Tetrachloroethene	No	Detected concentrations (0.38 to 0.4 µg/L) are within the range of nondetect values.
Toluene	No	The single detected value of 0.014(J) µg/L is less than the range of detection limits.
Total organic halides	No	Individual halogenated organic compounds are evaluated.
Total petroleum hydrocarbons	No	No toxicity data; specific components of petroleum products are evaluated via chemical-specific slope factors and hazard quotients.
Total petroleum hydrocarbons- diesel range	No	No toxicity data; specific components of petroleum products are evaluated via chemical-specific slope factors and hazard quotients.
Total petroleum hydrocarbons- gasoline range	No	No toxicity data; specific components of petroleum products are evaluated via chemical-specific slope factors and hazard quotients.
Total petroleum hydrocarbons- motor oil (high boiling)	No	No toxicity data; specific components of petroleum products are evaluated via chemical-specific slope factors and hazard quotients.
Xylenes (total)	Uncertain	The single detected value of 3.7 µg/L is above all detection limits. Uncertain COPC status: inadequate data to calculate an exposure concentration.

Table 6-10. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-NR-2 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
Radionuclides		
Cesium-137	No	The single detection outside the range of common detection limits is 16 pCi/L at well 199-N-32. This is the only detection at this well among 14 samples between 1998 and 2007.
Cobalt-60	No	Detected in 2 of 20 samples from well 199-N-67 with a maximum concentration of 38.6 pCi/L. Maximum less than 10 times many nondetect values; short half-life of 5.3 years.
Europium-155	No	Detected in one of seven samples from well 199-N-67 with a concentration of 26.9 pCi/L. The highest U-qualified value was 23.7 pCi/L. Short half-life of 4.75 years.
Gross alpha	No	No toxicity data; specific alpha emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Gross beta	No	No toxicity data; specific beta emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Potassium-40	No	Exclusion list analyte; background radionuclide.
Radium-226	No	Exclusion list analyte; background radionuclide.
Radium-228	No	Exclusion list analyte; background radionuclide.
Strontium-90	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Thorium-230	No	Exclusion list analyte; background radionuclide.
Tritium	Yes	Inclusion list analyte.
Uranium-233/234	Yes	Inclusion list analyte.
Uranium-238	Yes	Inclusion list analyte.
Anions		
Bromide	No	Naturally occurring anion in surface and groundwater. No toxicity data.
Carbonate ion	No	A major anion analyzed as a water quality parameter.
Chloride	No	A major anion analyzed as a water quality parameter.
Fluoride	Yes	Values at a subset of wells including 199-N-72, 199-N-73, and 199-N-77 are elevated above the range common to all groundwater OUs.
Nitrogen in nitrate	Yes	High detection frequency and large sample size. Broad range of detected values.
Nitrogen in nitrite	Yes	Detect frequency about 10%. Adequate number of detects to support risk calculations.
Phosphorous in phosphate	No	Phosphorus is an essential nutrient. As phosphoric acid in solution it is used in the food industry for acidifying soft drinks and other foods.
Sulfate	No	No toxicity data; a major anion analyzed as a water quality parameter.

BHC = benzene hexachloride
COPC = contaminant of potential concern
DDD = dichlorodiphenyldichloroethane
DDT = dichlorodiphenyltrichloroethane
ND = nondetect
OU = operable unit

Table 6-11. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-HR-3 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
Inorganics		
Aluminum	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Antimony	No	The high value of 437 µg/L in well 699-97-43 in 2001 is the only detect among six samples from 1999 to 2007. The range of detect and nondetect values is otherwise comparable among all seven OUs.
Arsenic	No	The value of 80 µg/L from 2002 is one of two samples at well 199-D4-7; the other is 2 µg/L from 2007. The value of 21.6 µg/L is one of two samples from 2002 in well 199-D4-70; the other is 2(U) µg/L. The rest of the data distribution is similar to that observed in other OUs. Arsenic concentrations in deep-zone soil in the 100-D/100-H Decision Area were consistent with background.
Barium	Yes	The range of barium concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, barium is identified as a groundwater COPC. However, barium concentrations were statistically consistent with background in shallow and deep zone soil in all decision areas, and groundwater values may have little relationship to Hanford Site operations.
Beryllium	No	The number of nondetect values generally exceeds the number of detects at any individual well. The detected values are within the range of nondetect values in the sampled wells.
Boron	No	The range of concentrations in all groundwater OUs are approximately identical, with the exception of the two outlier values at 100-FR-3.
Cadmium	No	The highest detected values are 5.8 µg/L at well 199-D4-15 and 6.1 µg/L at well 199-D4-44. The result at well 199-D4-15 is the only detect among 18 samples. The result at well 199-D4-44 is the only detect among 11 samples.
Calcium	No	Exclusion list analyte; essential nutrient.
Calculated total uranium	No	There are more complete results available for uranium (inorganic).
Chromium	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Cobalt	Yes	Elevated detects relative to other OUs. The highest results (43.4(B) to 88.4 µg/L) are from samples in 1998 at well 199-D4-1, but a seventh sample from 2007 in this well was 24.1 µg/L.
Copper	No	With the exception of two outlier values at 100-HR-3 and 100-NR-2, the distribution of copper results is consistent among all groundwater OUs. The value of 210 µg/L is one of six samples at well 699-97-43; all other samples are nondetect at this well. The value of 116(D) µg/L at well 199-D5-15 was subject to a 10-time dilution; there are 11 nondetect results at this well and 2 detections within the range common to all OUs.
Hexavalent chromium	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Iron	Yes	The range of iron concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs excluding 100-BC-5 and 100-FR-3. In the absence of groundwater background, iron is identified as a groundwater COPC in this OU.
Lead	No	No toxicity data for lead. The single result of 11 µg/L is close to the EPA action level of 15 µg/L.

Table 6-11. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-HR-3 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
Lithium	No	No toxicity data. Unlikely to be site related: concentrations in cleanup verification shallow zone soil data are within the range observed in reference area and area background data sets.
Magnesium	No	Exclusion list analyte; essential nutrient.
Manganese	Yes	The range of manganese concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, manganese is identified as a groundwater COPC.
Molybdenum	Uncertain	The two outlying values of 39.2 and 49.6(B) µg/L are from one of two wells where detected; the other detections were 3.2 and 4.2 µg/L, respectively. All other samples were in the range of common values across all groundwater OUs.
Nickel	Yes	Results at a number of wells are elevated with respect to most other wells in this and other OUs. These include 199-D4-1, 199-D4-4, 199-D4-5, 199-D4-6, 199-D8-5, and 199-D8-55.
Phosphorus	No	Phosphorus is an essential nutrient.
Potassium	No	Exclusion list analyte; essential nutrient.
Selenium	No	Range of detected (2.6 to 5.3 µg/L) and nondetect concentrations (3.5 to 4.7) from all OUs are equivalent.
Silica	No	Exclusion list analyte, analogous to silicon.
Silicon	No	Exclusion list analyte.
Silver	Yes	Possible bimodal distribution. All values above 20 µg/L in either 100-HR-3 or 100-KR-4. Values in other OUs range up to approximately 15 µg/L.
Sodium	No	Exclusion list analyte; essential nutrient.
Strontium (elemental)	Yes	The range of concentrations is wide at each OU, and both the 50th percentile and inner quartiles of the box plots vary a lot among the different OUs. In the absence of background data, and because strontium-90 is on the groundwater inclusion list, strontium is identified as a groundwater COPC.
Sulfur	No	No toxicity data; naturally occurring.
Thallium	No	Detected values in 100-HR-3, 100-NR-2, and 300-FF-5 are comparable. Detected values only slightly elevated relative to detection limits.
Tin	No	The single detection of 3.2(B) µg/L is within the range of nondetect values.
Uranium (inorganic)	Yes	Inclusion list analyte.
Vanadium	No	The range of concentrations, and the inner quartile of the box plots, are approximately equivalent in all OUs.
Zinc	Yes	The range of zinc concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, zinc is identified as a groundwater COPC.
Organics		
2,4-Dinitrophenol	No	The single detect at 1.1(J) µg/L is well below the usual detection limit of 25 µg/L.
2-secButyl-4,6-dinitrophenol [DNBP]	No	The single detect at 0.6(J) µg/L is approximately the same at the detection limit of 0.52 µg/L.

Table 6-11. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-HR-3 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
4,6-Dinitro-2-methylphenol	No	The single detect at 0.6(J) µg/L is well below the usual detection limit of 25 µg/L.
Aroclor-1254	Uncertain	The single detection (8.3 µg/L) is the only sample from well 199-H4-10. The most common detection limit in other PCB samples is 0.4 µg/L; the value of 40(U) µg/L for 9 samples in 100-HR-3 appears to be based on sample dilution. Uncertain COPC status: inadequate data to calculate an exposure concentration.
Bis[2-ethylhexyl] phthalate	No	A common laboratory contaminant with estimate detected values within or near the range of common detection limits. The range of detected values (0.62(JB) to 7(JB) µg/L) is less than the two nondetect values of 10 µg/L. The range of nondetects at 300-FF-5 is mostly between 1 and 4 µg/L, with a few higher outlying nondetects.
DDE	No	The single detected value of 0.2(X) µg/L is <10 times the average detection limit value of 0.05 µg/L. DDT and DDD not detected in any sample.
Di-n-butylphthalate	No	A common laboratory contaminant with estimate detected values within or near the range of common detection limits. The range of detected values (0.6(JB) to 1.6(JB) µg/L) is less than the nondetect values of 10 µg/L.
Endrin aldehyde	No	The single detected value of 0.46(JB) µg/L is <10 times the average detection limit value of about 0.17 µg/L.
Total organic halides	No	Individual halogenated organic compounds are evaluated.
Radionuclides		
Gross alpha	No	No toxicity data; specific alpha emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Gross beta	No	No toxicity data; specific beta emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Potassium-40	No	Exclusion list analyte; background radionuclide.
Strontium-90	Yes	Inclusion list analyte.
Technetium-99	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Thorium-230	No	Exclusion list analyte; background radionuclide.
Tritium	Yes	Inclusion list analyte.
Uranium-233/234	Yes	Inclusion list analyte.
Uranium-235	No	Low detection frequency and similar range of concentrations in 100-FR-3, 100-HR-3, and 100-KR-4.
Uranium-238	Yes	Inclusion list analyte.
Anions		
Bromide	No	Naturally occurring anion in surface and groundwater. No toxicity data.
Chloride	No	A major anion analyzed as a water quality parameter.
Fluoride	No	The distribution of results is approximately equivalent in 100-BC-5, 100-FR-3, 100-HR-3, 100-KR-4, and 100-F/100-IU2-/100-IU-6. The single higher value occurs at a well with numerous other detects at concentrations within the range normal to all OUs.
Nitrogen in nitrate	Yes	High detection frequency and large sample size. Broad range of detected values.
Nitrogen in nitrite	Yes	Detect frequency about 10%. Adequate number of detects to support risk calculations.

Table 6-11. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-HR-3 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
Sulfate	No	No toxicity data; a major anion analyzed as a water quality parameter.

COPC = contaminant of potential concern
DDD = dichlorodiphenyldichloroethane
DDT = dichlorodiphenyltrichloroethane
OU = operable unit
PCB = polychlorinated biphenyl

Table 6-12. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-FR-3 Operable Unit Groundwater Data. (3 Pages)

Analyte	COPC	Explanation
Inorganics		
Aluminum	No	The range of concentrations in individual wells is approximately equivalent to that across different wells and different OUs.
Antimony	No	The range of detect and nondetect values is comparable among all seven OUs.
Arsenic	No	The data distribution is similar to that observed in other OUs. The highest detected value of 9.3 µg/L is about 50% higher than the common detection limit of 6 µg/L.
Barium	Yes	The range of barium concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, barium is identified as a groundwater COPC. However, barium concentrations were statistically consistent with background in shallow and deep zone soil in all decision areas and groundwater values may have little relationship to Hanford Site operations.
Beryllium	No	The detected values are within the range of nondetect values in the sampled wells.
Boron	Yes	The two outlier values are more than twice the value of any other sample across all groundwater OUs. Boron was also identified as likely present at concentrations above background levels in shallow zone soil in the 100-F/100-IU-2/100-IU-6 Decision Area.
Calcium	No	Exclusion list analyte; essential nutrient.
Calculated total uranium	No	There are more complete results available for uranium (inorganic).
Chromium	Yes	Inclusion list analyte.
Cobalt	No	The few detects are from wells 199-F5-43A, 199-F5-43B, and 199-F5-44. At each well, there are also one or two samples that are nondetect or at much lower values in the range of nondetects.
Copper	No	With the exception of two outlier values at 100-HR-3 and 100-NR-2, the distribution of copper results is consistent among all groundwater OUs.
Hexavalent chromium	Yes	Inclusion list analyte. Detected values are from only four wells, so exposure concentrations will not apply generally to 100-FR-3.
Iron	No	The range of iron concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs excluding 100-BC-5 and 100-FR-3.
Lithium	No	No toxicity data. Unlikely to be site-related: concentrations in cleanup verification shallow zone soil data are within the range observed in reference area and area background data sets.
Magnesium	No	Exclusion list analyte; essential nutrient.
Manganese	Yes	The range of manganese concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, manganese is identified as a groundwater COPC.

Table 6-12. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-FR-3 Operable Unit Groundwater Data. (3 Pages)

Analyte	COPC	Explanation
Molybdenum	No	The range of sample results is consistent among 100-FR-3, 100-KR-4, 300-FF-5, and (excepting two outliers) 100-HR-3 and 100-NR-2.
Nickel	No	Detected concentrations in these wells are within the range of nondetect values.
Phosphorus	No	Phosphorus is an essential nutrient.
Potassium	No	Exclusion list analyte; essential nutrient.
Selenium	No	Range of detected (2.6 to 5.3 µg/L) and nondetect concentrations (3.5 to 4.7) from all OUs are equivalent.
Silicon	No	Exclusion list analyte.
Silver	No	Low detect frequency. Values comparable to all other OUs.
Sodium	No	Exclusion list analyte; essential nutrient.
Strontium (elemental)	Yes	The range of concentrations is wide at each OU, and both the 50th percentile and inner quartiles of the box plots vary a lot among the different OUs. In the absence of background data, and because strontium-90 is on the groundwater inclusion list, strontium is identified as a groundwater COPC.
Tin	No	The single detection of 6(C) µg/L is within the range of nondetect values.
Uranium (inorganic)	Yes	Inclusion list analyte.
Vanadium	No	The range of concentrations, and the inner quartile of the box plots, are approximately equivalent in all OUs.
Zinc	Yes	The range of zinc concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, zinc is identified as a groundwater COPC.
Organics		
1,2-Dichloroethane	No	The maximum of the range of detected concentrations (0.083(J) to 0.34(J) µg/L) is slightly higher than the common detection limit of 0.15 to 0.3 µg/L.
1,4-Dichlorobenzene	No	The range of detected concentrations (0.21(J) to 0.24(J) µg/L) is within the range of nondetect values.
2-Butanone	No	Detected in 3 of 112 samples; detected values (0.8 to 1 µg/L) within the range of detection limits.
Acetone	No	The range of detected values (0.3(BJ) to 4.4(JB) µg/L) is within the range of nondetect values.
Bis[2-ethylhexyl] phthalate	No	A common laboratory contaminant with estimate detected values within or near the range of common detection limits. The range of detected values is approximately 0.6(J) to 2(J) µg/L, with one detect of 4(J) µg/L. The range of nondetects at 300-FF-5 is mostly between 1 and 4 µg/L, with a few higher outlying nondetects.
Carbon tetrachloride	No	The detected values (0.2(J) to 1(J) µg/L) are within the range of detection limits.
Chloroform	Yes	Elevated relative to detection limits in some wells including 199-F5-46 and 199-F5-6. Exposure concentrations will generally not apply to the 100-FR OU.
Di-n-butylphthalate	No	A common lab contaminant with estimate detected values within or near the range of common detection limits. The range of detected values (0.62JB) to 2(JB) µg/L is less than the two nondetect values of 10 µg/L. The range of nondetects at 300-FF-5 is mostly between 1 and 4 µg/L, with a few higher outlying nondetects.
Endrin aldehyde	No	Detected values (0.011 to 0.014 µg/L) within the range of detection limits.
Heptachlor epoxide	No	The single detected value (0.37 µg/L) is <10x average detection limit value.
Methylenechloride	No	Detected concentrations above normal detection limits in three wells: 199-F6-1, 199-F7-1, and 199-F5-45. There are more nondetect than detected values at these wells.
Trichloroethene	Yes	Present at concentrations well above detection limits; adequate data for risk calculations.

Table 6-12. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-FR-3 Operable Unit Groundwater Data. (3 Pages)

Analyte	COPC	Explanation
Radionuclides		
Carbon-14	Uncertain	The three detected concentrations are elevated by a factor of 2 to 3 above most nondetect values, but there are inadequate data to support risk calculations.
Gross alpha	No	No toxicity data; specific alpha emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Gross beta	No	No toxicity data; specific beta emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Strontium-90	Yes	Inclusion list analyte.
Thorium-228	No	Exclusion list analyte; background radionuclide.
Thorium-230	No	Exclusion list analyte; background radionuclide.
Tritium	Yes	Inclusion list analyte.
Uranium-233/234	Yes	Inclusion list analyte.
Uranium-235	No	Low detection frequency and similar range of concentrations in 100-FR-3, 100-HR-3, and 100-KR-4.
Uranium-238	Yes	Inclusion list analyte.
Anions		
Bromide	No	Naturally occurring anion in surface and groundwater. No toxicity data.
Carbon disulfide	No	Detected in 3 of 112 samples; maximum detected value (2.8 µg/L) <10 times the average detection limit value.
Chloride	No	A major anion analyzed as a water quality parameter.
Fluoride	No	The distribution of results is approximately equivalent in 100-BC-5, 100-FR-3, 100-HR-3, 100-KR-4, and 100-F/100-IU-2/100-IU-6.
Nitrogen in nitrate	Yes	High detection frequency and large sample size. Broad range of detected values.
Nitrogen in nitrite	No	Low detection frequency; detected values within the range of nondetects. Low values relative to nitrate. Adequate data to evaluate nitrogen as nitrate in this OU.
Sulfate	No	No toxicity data; a major anion analyzed as a water quality parameter.

COPC = contaminant of potential concern
OU = operable unit

Table 6-13. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-IU-2/100-IU-6 Operable Unit Groundwater Data. (3 Pages)

Analyte	COPC	Explanation
Inorganics		
Aluminum	Uncertain	The concentration of 1,290 µg/L at well 699-43-2 is well above the range of detections at this and four other OUs. Potentially present, but inadequate data to support risk calculations.
Antimony	No	The range of detect and nondetect values is comparable among all seven OUs.
Arsenic	No	The single value is near the upper part of the distribution of results observed in other OUs. Arsenic concentrations in deep zone soil in the 100-F/100-IU-2/100-IU-6 Decision Area were consistent with background.

Table 6-13. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-IU-2/100-IU-6 Operable Unit Groundwater Data. (3 Pages)

Analyte	COPC	Explanation
Barium	Yes	The range of barium concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, barium is identified as a groundwater COPC. However, barium concentrations were statistically consistent with background in shallow and deep zone soil in all decision areas and groundwater values may have little relationship to Hanford Site operations.
Beryllium	No	The detected values are within the range of nondetect values in the sampled wells.
Calcium	No	Exclusion list analyte; essential nutrient.
Calculated total uranium	No	Inadequate sampling to support risk assessment calculations. (see COPC status for inorganic and isotopic uranium)
Chromium	No	Inadequate detections to support risk assessment calculations. Detected value consistent with values in 100-BC-5, 100-FR-3 and 300-FF-5.
Copper	No	With the exception of two outlier values at 100-HR-3 and 100-NR-2, the distribution of copper results is consistent among all groundwater OUs.
Iron	Yes	The range of iron concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs excluding 100-BC-5 and 100-FR-3. In the absence of groundwater background, iron is identified as a groundwater COPC in this OU.
Lead	No	No toxicity data for lead. The range of detected concentrations (2.2(B) to 3.9 µg/L) is below the EPA action level of 15 µg/L.
Magnesium	No	Exclusion list analyte; essential nutrient.
Manganese	Yes	The range of manganese concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, manganese is identified as a groundwater COPC.
Potassium	No	Exclusion list analyte; essential nutrient.
Selenium	No	Range of detected (2.6 to 5.3 µg/L) and nondetect concentrations (3.5 to 4.7 µg/L) from all OUs are equivalent.
Silver	No	Small sample size. Values comparable to all other OUs.
Sodium	No	Exclusion list analyte; essential nutrient.
Strontium (elemental)	Yes	The range of concentrations is wide at each OU, and both the 50th percentile and inner quartiles of the box plots vary a lot among the different OUs. In the absence of background data, and because strontium-90 is on the groundwater inclusion list, strontium is identified as a groundwater COPC.
Uranium (inorganic)	Uncertain	Only one sample; inadequate sampling to support risk assessment calculations.
Vanadium	No	The range of concentrations, and the inner quartile of the box plots, are approximately equivalent in all OUs.
Zinc	Yes	The range of zinc concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, zinc is identified as a groundwater COPC. Zinc was identified in the 2006 Groundwater Monitoring Report as being elevated in groundwater in the 100-FR-3 OU, possibly due to well casing corrosion.
Organics		
1,4-Dichlorobenzene	No	The single detected value of 0.13(X) µg/L is <10 times the average detection limit value of 0.05 µg/L.

Table 6-13. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 100-IU-2/100-IU-6 Operable Unit Groundwater Data. (3 Pages)

Analyte	COPC	Explanation
Acetone	No	The range of detected values (0.76(JB) to 4.3(J) µg/L) is only slightly elevated compared to the range of nondetect values (0.3 to 1.9 µg/L).
Bis[2-ethylhexyl] phthalate	No	The detected value of 4,967 µg/L is far greater than the usual detections of 0.5 to 5 µg/L in other OUs. Uncertain COPC status: inadequate data to calculate an exposure concentration.
Carbon tetrachloride	No	Detected in 2 of 22 samples; detected values (0.27 and 0.28 µg/L) within the range of common detection limits.
Chloroform	Uncertain	Detects are at two wells (699-71-30 and 699-20-E12O) and are elevated with respect to detection limits. Uncertain COPC status: Inadequate data to support risk calculations.
Di-n-octylphthalate	Uncertain	This is the only detected value from any OU. The value of 42 µg/L is higher than the common detection limits of 5 to 10 µg/L. Uncertain COPC status: inadequate data to calculate an exposure concentration.
Methylenechloride	Uncertain	The outlier detect of 290(B) µg/L was diluted by 100 times. All other detects are 1998 or 1999; more recent results all nondetect. Concentrations of 2(J) µg/L at well 699-66-23 were above common detection limits but there are no subsequent data.
Oil and grease	No	No toxicity data; specific components of petroleum products are evaluated via chemical-specific slope factors and hazard quotients.
Total organic halides	No	Individual halogenated organic compounds are evaluated.
Total petroleum hydrocarbons	No	No toxicity data; specific components of petroleum products are evaluated via chemical-specific slope factors and hazard quotients.
Radionuclides		
Gross alpha	No	No toxicity data; specific alpha-emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Gross beta	No	No toxicity data; specific beta-emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Potassium-40	No	Exclusion list analyte; background radionuclide.
Technetium-99	Yes	Inclusion list analyte.
Tritium	Yes	Inclusion list analyte.
Uranium-233/234	Uncertain	Only two samples; inadequate sampling to support risk assessment calculations.
Uranium-238	Uncertain	Only two samples; inadequate sampling to support risk assessment calculations.
Anions		
Chloride	No	A major anion analyzed as a water quality parameter.
Fluoride	No	The distribution of results is approximately equivalent in 100-BC-5, 100-FR-3, 100-HR-3, 100-KR-4, and 100-F/100-IU-2/100-IU-6.
Nitrogen in nitrate	Yes	High detection frequency and large sample size. Broad range of detected values.
Nitrogen in nitrite	No	Small number of detects (13). Low values relative to nitrate. Adequate data to evaluate nitrogen as nitrate in this OU.
Sulfate	No	No toxicity data; a major anion analyzed as a water quality parameter.

COPC = contaminant of potential concern
EPA = U.S. Environmental Protection Agency
OU = operable unit

Table 6-14. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 300-FF-5 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
Inorganics		
Aluminum	No	The range of concentrations in individual wells is approximately equivalent to that across different wells and different OUs.
Antimony	No	The range of detect and nondetect values is comparable among all seven OUs.
Arsenic	No	The data distribution is similar to that observed in other OUs.
Barium	Yes	The range of barium concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, barium is identified as a groundwater COPC. However, barium concentrations were statistically consistent with background in shallow and deep zone soil in all decision areas and groundwater values may have little relationship to Hanford Site operations.
Beryllium	No	The value of 2.1(B) µg/L from 1999 is one of eight samples at well 699-S6-E4A; six are nondetects and the other detect is 0.17 µg/L.
Boron	No	The range of concentrations in all groundwater OUs are approximately identical, with the exception of the two outlier values at 100-FR-3.
Calcium	No	Exclusion list analyte; essential nutrient.
Calculated total uranium	No	There are more complete results available for uranium (inorganic).
Chromium	Yes	Inclusion list analyte.
Cobalt	No	The single detection outside the range of nondetect values is from 2006 at well 199-N-26. There are no other data at this well.
Copper	No	With the exception of two outlier values at 100-HR-3 and 100-NR-2, the distribution of copper results is consistent among all groundwater OUs.
Hexavalent chromium	No	Detected concentrations within a factor of 2 of nondetect values.
Iron	Yes	The range of iron concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs excluding 100-BC-5 and 100-FR-3. In the absence of groundwater background, iron is identified as a groundwater COPC in this OU.
Lithium	No	No toxicity data. Unlikely to be site-related: concentrations in cleanup verification shallow zone soil data are within the range observed in reference area and area background data sets.
Magnesium	No	Exclusion list analyte; essential nutrient.
Manganese	Yes	The range of manganese concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, manganese is identified as a groundwater COPC.
Molybdenum	No	The range of sample results is consistent among 100-FR-3, 100-KR-4, 300-FF-5, and (excepting two outliers) 100-HR-3 and 100-NR-2.
Nickel	Uncertain	The highest value (37.2 µg/L) is the only sample from well 399-1-21B. Although some concentrations in other wells are slightly elevated above the range common to all OUs, there are other samples in those wells that are within the range. Uncertain COPC status based on well 399-1-21B.
Phosphorus	No	Phosphorus is an essential nutrient. As phosphoric acid in solution it is used in the food industry for acidifying soft drinks and other foods.
Potassium	No	Exclusion list analyte; essential nutrient.

Table 6-14. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 300-FF-5 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
Selenium	No	Range of detected (2.6 to 5.3 µg/L) and nondetect concentrations (3.5 to 4.7) from all OUs are equivalent.
Silicon	No	Exclusion list analyte.
Silver	No	Values comparable to all other OUs.
Sodium	No	Exclusion list analyte; essential nutrient.
Strontium (elemental)	Yes	The range of concentrations is wide at each OU, and both the 50th percentile and inner quartiles of the box plots vary a lot among the different OUs. In the absence of background data, and because strontium-90 is on the groundwater inclusion list, strontium is identified as a groundwater COPC.
Thallium	No	Detected values in 100-HR-3, 100-NR-2, and 300-FF-5 are comparable. Detected values only slightly elevated relative to detection limits.
Tin	No	Detected value of 10 µg/L is about twice common detection limit of 5 µg/L in this OU, but about equal to detection limits from other OUs.
Uranium (inorganic)	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Vanadium	No	The range of concentrations, and the inner quartile of the box plots, are approximately equivalent in all OUs.
Zinc	Yes	The range of zinc concentrations is large, and there are sufficient data to observe obvious differences in concentrations among the seven groundwater OUs. In the absence of groundwater background, zinc is identified as a groundwater COPC.
Organics		
1,1-Dichloroethene	No	The single detected value of 0.35(J) µg/L is within the range of detection limits.
1,2-Dichlorobenzene	No	The single detected value of 3(J) µg/L is only slightly higher than common detection limits of 0.2 to 2 µg/L.
1,2-Dichloroethane	No	Detected in 4 of 1,196 samples at concentrations between 0.082(J) and 1 µg/L. Common detection limits go to 1 µg/L.
1,2-Dichloroethene (total)	Uncertain	Detected in three of seven samples at well 399-3-21 at concentrations of 12 to 27 µg/L. Common detection limit of 1 µg/L. Uncertain COPC status: inadequate data to calculate an exposure concentration.
1,4-Dichlorobenzene	No	The range of detected concentrations (0.2(J) to 0.64(J) µg/L) is within the range of nondetect values.
1-Butanol	No	The detected values (5.5 and 15 µg/L) are within the range of the detection limits.
2-Butanone	No	Only one detected value (76(B) µg/L in well 699-S6-E4A) is outside the range of common detection limits. This sample was collected in 1998 and there have been no other detections of 2-butanone in this well through 2007.
2-Heptanone	No	The detected value of 15 µg/L is within the range of detection limits for 2-hexanone in the well where it was detected.
2-Hexanone	No	The single detected value of 10 µg/L is within the range of detection limits.
Acetone	Yes	The mean of detected concentrations (2.7 µg/L) is more than twice the mean of the nondetects (1.2 µg/L) with several high values. There are adequate detects to calculate percentiles for the OU.
Benzene	No	The detected values (0.073 and 0.2 µg/L) are within the range of the detection limits.
Benzo[ghi]perylene	No	The single detected value of 1.047(J) µg/L is below the detection limit of 10 µg/L for the other RCBRA groundwater samples in the 300 Area.

Table 6-14. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 300-FF-5 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
Benzyl alcohol	No	The single detected value of 2.7(J) µg/L is about a factor of 2 higher than the average detection limit of 1.6 µg/L.
Bis[2-ethylhexyl] phthalate	No	A common laboratory contaminant with estimate detected values within or near the range of common detection limits. The range of detected values is approximately 1(J) to 4(JB) µg/L, with one detect of 6.9(J) µg/L. The range of nondetects is also mostly between 1 and 4 µg/L, with a few higher outlying nondetects.
Carbon tetrachloride	Yes	Concentrations at two wells (399-2-5 and 399-3-22) are elevated with respect to detection limits. Exposure concentrations will not be representative of the 300 Area generally.
Chlorobenzene	No	The single detected value of 0.41(J) µg/L is within the range of detection limits.
Chloroform	Yes	Elevated relative to detection limits in some wells, including 699-13-0A, 399-3-11, and 399-3-21. Exposure concentrations will not apply to the 300 Area generally.
Chloromethane	No	The detected values (both are 1.4(J) µg/L) are within the range of the detection limits and only slightly above the most common detection limit of 1 µg/L.
cis-1,2-Dichloroethylene	Yes	Inclusion list analyte.
Di-n-butylphthalate	No	A common lab contaminant with estimate detected values within or near the range of common detection limits. The range of detected values (0.56(JB) to 3(JB) µg/L) is within the range of nondetects that are mostly between 0.5 and 4 µg/L, with 5 nondetects of 10 µg/L.
Methanol	No	No toxicity data. Subject to rapid environmental decomposition.
Methyl isobutyl ketone	No	The single detection outside the range of common detection limits is 38 pCi/L at well 699-S6-E4A. This is the only detection at this well among 24 samples between 1998 and 2007.
Methylenechloride	Yes	Numerous detects above detection limits at several wells including 699-13-3A, 699-S6-E4A, 699-13-1D, 399-4-14, and 399-1-11.
Nitrobenzene	No	The single detected value of 1(J) µg/L is within the range of detection limits.
Oil and grease	No	No toxicity data; specific components of petroleum products are evaluated via chemical-specific slope factors and hazard quotients.
Tetrachloroethene	Yes	Upper end of the distribution of detects extends beyond nondetect levels; data are adequate for risk assessment.
Tetrahydrofuran	No	The single detected value of 3.6(J) µg/L is only slightly higher than common detection limits of 1 to 3 µg/L.
Toluene	No	The range of detected concentrations (0.082(J) to 1.6 µg/L) is within the range of common nondetect values.
Total organic halides	No	Individual halogenated organic compounds are evaluated.
trans-1,2-Dichloroethylene	No	The five highest detects (1.2 to 1.9 µg/L) are among 76 samples at well 399-1-16B. The other samples at this well are all nondetect or within the range of nondetects for this analyte. Six of the detection limits are 1 µg/L or higher.
Tributyl phosphate	Yes	Clearly present at concentrations well above detection limits.
Trichloroethene	Yes	Present at concentrations well above detection limits; adequate data for risk calculations.
Vinyl chloride	No	The single detection outside the range of common detection limits is 13(JD) µg/L at well 399-1-16B in 2001. This is 1 of just 2 detections at this well among 76 samples between 1998 and 2007.

Table 6-14. Analyte-Specific Evaluation to Determine Contaminant of Potential Concern Status for 300-FF-5 Operable Unit Groundwater Data. (4 Pages)

Analyte	COPC	Explanation
Xylenes (total)	No	Two of the three detected values (0.32(J), 5(BJ), and 10 µg/L) are above the common detection limits of <1 µg/L. These values are isolated occurrences among many nondetect values in the same wells.
Radionuclides		
Carbon-14	No	The detected concentrations do not differ appreciably from the range of positive U-qualified values.
Gross alpha	No	No toxicity data; specific alpha-emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Gross beta	No	No toxicity data; specific beta-emitters are evaluated via radionuclide-specific slope factors and dose conversion factors.
Iodine-129	No	Detected in one of nine samples in well 699-13-1E over 3 years. The value of 18.6 pCi/L is well above the range of detection limits (<1 pCi/L). No evidence of consistent presence in this well.
Nickel-63	Uncertain	All samples are from a single well (699-13-3A). The five detected values are higher than all but one of the U-qualified values. The detection status at this well is uncertain.
Potassium-40	No	Exclusion list analyte; background radionuclide.
Strontium-90	Yes	Inclusion list analyte.
Technetium-99	Yes	Inclusion list analyte.
Tritium	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Uranium-233/234	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Uranium-235	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Uranium-238	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Anions		
Carbon disulfide	No	The only detected value outside the range of common detection limits is 18 µg/L from 1998 in well 399-1-18B. The other 65 samples at this well are all nondetect for carbon disulfide.
Chloride	No	A major anion analyzed as a water quality parameter.
Fluoride	Yes	Clearly elevated relative to other OUs based on box plot review; data are adequate for risk assessment.
Nitrogen in nitrate	Yes	High detection frequency and large sample size. Broad range of detected values.
Nitrogen in nitrite	Yes	Detect frequency about 10%. Adequate number of detects to support risk calculations.
Phosphorous in phosphate	No	Phosphorus is an essential nutrient. As phosphoric acid in solution it is used in the food industry for acidifying soft drinks and other foods.
Sulfate	No	No toxicity data; a major anion analyzed as a water quality parameter.

COPC = contaminant of potential concern
OU = operable unit
RCBRA = River Corridor Baseline Risk Assessment

Table 6-15. Summary of Contaminant of Potential Concern for Groundwater Data. (4 Pages)

Analyte	Number of Samples	Number of Detects
100-BC-5 Operable Unit		
Barium	43	42
Chromium	43	40
Hexavalent chromium	20	20
Manganese	43	29
Strontium (elemental)	43	43
Zinc	43	35
Trichloroethene	9	7
Nitrogen in nitrate	168	168
Strontium-90	143	97
Technetium-99	18	12
Tritium	186	163
100-KR-4 Operable Unit		
Aluminum	204	133
Barium	263	263
Chromium	290	278
Hexavalent chromium	282	242
Iron	301	271
Manganese	287	220
Nickel	263	109
Silver	11	11
Strontium (elemental)	256	256
Uranium (inorganic)	54	44
Zinc	263	226
Trichloroethene	20	19
Nitrogen in nitrate	724	696
Nitrogen in nitrite	717	58
Carbon-14	160	154
Strontium-90	309	153
Technetium-99	148	61
Tritium	892	751
Uranium-233/234	15	13
Uranium-238	15	15
100-NR-2 Operable Unit		
Barium	42	42
Calculated total uranium	15	13
Chromium	42	30
Hexavalent chromium	18	5
Iron	42	33
Manganese	42	26
Nickel	42	22

Table 6-15. Summary of Contaminant of Potential Concern for Groundwater Data. (4 Pages)

Analyte	Number of Samples	Number of Detects
Strontium (elemental)	41	41
Zinc	42	31
Fluoride	612	449
Nitrogen in nitrate	612	598
Nitrogen in nitrite	611	65
Strontium-90	512	400
Tritium	483	394
Uranium-233/234	15	13
Uranium-238	15	13
100-HR-3 Operable Unit		
Aluminum	344	189
Barium	468	468
Chromium	472	449
Cobalt	466	50
Hexavalent chromium	1147	1065
Iron	470	405
Manganese	470	327
Nickel	466	171
Silver	470	30
Strontium (elemental)	443	443
Uranium (inorganic)	198	178
Zinc	470	382
Nitrogen in nitrate	835	828
Nitrogen in nitrite	691	62
Strontium-90	142	62
Technetium-99	66	38
Tritium	493	379
Uranium-233/234	21	18
Uranium-238	21	17
100-FR-3 Operable Unit		
Barium	55	54
Boron	11	11
Chromium	55	41
Hexavalent chromium	17	9
Manganese	55	37
Strontium (elemental)	55	54
Uranium (inorganic)	52	49
Zinc	55	40
Chloroform	115	53
Trichloroethene	115	64
Nitrogen in nitrate	200	199

Table 6-15. Summary of Contaminant of Potential Concern for Groundwater Data. (4 Pages)

Analyte	Number of Samples	Number of Detects
Strontium-90	145	83
Tritium	169	112
Uranium-233/234	12	12
Uranium-238	12	12
100-IU-2/100-IU-6 Operable Unit		
Barium	7	7
Iron	7	7
Manganese	7	6
Strontium (elemental)	6	6
Zinc	7	4
Nitrogen in nitrate	104	102
Technetium-99	31	22
Tritium	96	64
300-FF-5 Operable Unit		
Barium	107	107
Chromium	108	72
Iron	99	81
Manganese	99	66
Strontium (elemental)	105	105
Uranium (inorganic)	1,301	1,137
Zinc	99	68
Acetone	1,190	156
Carbon tetrachloride	1,198	45
Chloroform	1,198	149
cis-1,2-Dichloroethylene	1,155	248
Methylenechloride	1,198	179
Tetrachloroethene	1,198	123
Tributyl phosphate	72	26
Trichloroethene	1,198	566
Fluoride	682	666
Nitrogen in nitrate	682	646
Nitrogen in nitrite	682	76
Strontium-90	58	20
Technetium-99	83	70
Tritium	599	502
Uranium-233/234	90	89
Uranium-235	90	76

Table 6-16. Contaminants of Potential Concern Identified for the Well-Specific Supplemental Assessments.

Groundwater Operable Unit	Analyte	Percent of Risk	Total Risk [a]
Cancer Risk (RME)			
100-FR-3	Strontium-90	0.56	1.E-04
	Tritium	0.20	
100-F/100-IU-2/100-I-U6	Tritium	0.97	2.E-04
300-FF-5	Tritium	0.88	2.E-03
100-BC-5	Strontium-90	0.43	2.E-04
	Tritium	0.53	
100-KR-4	Strontium-90	0.84	4.E-03
100-NR-2	Strontium-90	0.99	5.E-03
Child Hazard (RME)			
100-HR-3	Hexavalent chromium	0.93	36
300-FF-5	Uranium	0.87	9.2

[a] Operable unit risk calculated for the Subsistence Farmer exposure scenario.
RME = reasonable maximum exposure

Table 6-17. Groundwater Monitoring Wells Evaluated for the Well-Specific Supplemental Assessments. (2 Pages)

Groundwater Operable Unit	Well Name	Number of Samples	Number of Detects	Well Mean	Well 95 UCL	Well Maximum Detect	Operable Unit 50th [a]	Operable Unit 90th [a]	Well Mean/ Operable Unit 90th	Well 95 UCL/ Operable Unit 90th	Operable Unit 50th Revised [b]	Operable Unit 90th Revised [b]
Hexavalent Chromium (µg/L)												
100-HR-3	199-D4-15	7	7	1,443	1,480	1,510	38	1,222	1.18	1.21	34.0	523
	199-D4-22	24	24	1,189	1,313	2,020			0.97	1.07		
	199-D5-104	38	37	6,854	8,247	12,200			5.61	6.75		
	199-D5-14	2	2	1,079	1,270	1,270			0.88	1.04		
	199-D5-38	28	28	416	527	1,490			0.34	0.43		
	199-D5-41	12	11	1,590	2,784	2,864			1.30	2.28		
	199-D5-43	25	25	952	1,431	4,070			0.78	1.17		
	199-D5-93	17	17	411	636	1,360			0.34	0.52		
	199-D5-99	37	37	17,313	28,971	61,000			14.17	23.71		
Strontium-90 (pCi/L)												
100-BC-5	199-B3-1	13	13	47.3	50.8	57.7	16.2	53.0	0.89	0.96	17.5	53.4
	199-B3-46	19	19	63.3	81.5	170			1.19	1.54		
100-KR-4	199-K-109A	34	34	2,964	5,144	6,970	1.74	1,964	1.51	2.62	0.491	33.1
100-NR-2	199-N-122	18	18	1,222	1,957	4,630	156	2,895	0.42	0.68	41.5	1,220
	199-N-2	13	13	529	1,490	2,970			0.18	0.51		
	199-N-46	30	30	5,471	9,005	15,700			1.89	3.11		
	199-N-67	20	20	10,242	12,116	22,000			3.54	4.19		
100-FR-3	199-F5-1	17	17	45.8	51.9	77.3	2.60	36.3	1.26	1.43	2.79	37.0
Tritium (pCi/L)												
100-BC-5	199-B3-1	10	10	15,798	59,434	70,100	5,940	41,700	0.38	1.43	5,370	39,980
	199-B3-47	12	12	43,725	67,521	88,100			1.05	1.62		
	199-B5-2	8	8	56,623	180,723	161,000			1.36	4.33		
	199-B8-6	10	10	42,860	57,391	91,900			1.03	1.38		
	199-B8-8	5	5	50,000	58,229	59,000			1.20	1.40		
100-FR-3	199-F5-46	10	10	3,734	4,886	8,700	711	8,424	0.44	0.58	527	3,790
	199-F5-47	10	10	4,183	6,765	9,910			0.50	0.80		
	199-F8-3	14	14	20,769	29,986	38,600			2.47	3.56		
100-F/100-IU-2/100-IU-6	699-29-4	3	3	93,567	106,000	106,000	25,100	100,610	0.93	1.05	--	--
	699-40-1	4	4	83,425	101,000	101,000			0.83	1.00		
	699-41-1A	10	10	98,400	112,744	136,000			0.98	1.12		
	699-43-3	4	4	104,000	146,000	146,000			1.03	1.45		
	699-46-4	10	10	81,450	91,538	116,000			0.81	0.91		

Table 6-17. Groundwater Monitoring Wells Evaluated for the Well-Specific Supplemental Assessments. (2 Pages)

Groundwater Operable Unit	Well Name	Number of Samples	Number of Detects	Well Mean	Well 95 UCL	Well Maximum Detect	Operable Unit 50th [a]	Operable Unit 90th [a]	Well Mean/ Operable Unit 90th	Well 95 UCL/ Operable Unit 90th	Operable Unit 50th Revised [b]	Operable Unit 90th Revised [b]
300-FF-5	699-13-2D	31	31	639,613	728,612	1,390,000	6,010	549,000	1.17	1.33	4,370	307,200
	699-13-3A	36	36	3,567,111	4,772,104	8,140,000			6.50	8.69		
Uranium (µg/L)												
300-FF-5	399-1-16A	72	72	74.5	79.6	136	13.8	92.4	0.81	0.86	13.6	87.6
	399-1-17A	69	69	81.1	89.6	248			0.88	0.97		
	399-1-3	4	4	113	153	153			1.22	1.66		
	399-1-7	21	21	76.5	87.2	153			0.83	0.94		
	399-2-1	16	16	109	148	252			1.18	1.61		
	399-2-2	16	16	128	173	322			1.38	1.87		
	399-3-1	10	10	152	217	285			1.64	2.35		
	399-3-10	18	18	107	136	218			1.16	1.47		
	399-3-12	13	13	36.0	49.1	96.9			0.39	0.53		
	399-3-9	6	6	111	152	191			1.20	1.64		
	399-4-10	6	6	89.2	97.8	105			0.96	1.06		
	399-4-9	17	17	92	106	163			1.00	1.15		
	399-1-10A	74	74	53.5	59.9	235			0.58	0.65		
	399-1-21A	16	16	36.1	46.3	97.2			0.39	0.50		
	399-3-11	16	16	46.6	59.0	107			0.50	0.64		
	699-S6-E4A	24	24	35.4	46.5	101			0.38	0.50		
	399-3-18	10	10	108	128	145			1.17	1.39		
	399-1-23	5	5	68.1	132	111			0.74	1.43		
	399-3-20	6	6	78.8	107	148			0.85	1.16		

= Well-analyte combinations where the ratio of well mean to operable unit 90th percentile, or the ratio of well 95 UCL to operable unit 90th percentile, indicates calculated risks at these wells would be notably higher than risks calculated for the entire operable unit.

[a] Corresponds to a percentile across all groundwater samples in an OU.
[b] Corresponds to a percentile across the groundwater samples in an OU that are not included in the individual wells where supplemental calculations are conducted.
-- = not applicable - no individual monitoring wells are identified for supplemental analysis
OU = operable unit
UCL = upper confidence limit

Table 6-18. Groundwater Risk Assessment Results for the Resident National Monument/Refuge and Subsistence Farmer Scenarios.

Scenario [a]	100-B/C [b]	100-K [c]	100-N [d]	100-D/100-H [e]	100-F/100-IU-2/100-IU-6 [f]	300 [g]
Reasonable Maximum Exposure						
Cancer Risk						
Resident National Monument/Refuge	2E-04	8E-04	2E-03	6E-05	8E-05 | 2E-04	9E-04
Subsistence Farmer	2E-04	9E-04	2E-03	6E-05	9E-05 | 2E-04	9E-04
Radiation Dose (mrem/yr)						
Resident National Monument/Refuge	10	47	120	3.2	4.9 | 13	52
Subsistence Farmer	12	45	150	3.8	6.0 | 13	51
Hazard Index [h]						
Resident National Monument/Refuge	0.80	3.2	1.6	9.1	2.8 | 1.4	5.3
Subsistence Farmer	1.5	5.6	2.7	17	4.8 | 2.4	8.8
Central Tendency Exposure						
Cancer Risk						
Resident National Monument/Refuge	6E-06	6E-06	1E-05	2E-06	2E-06 | 1E-05	1E-05
Subsistence Farmer	4E-06	4E-06	9E-06	1E-06	2E-06 | 7E-06	7E-06
Radiation Dose (mrem/yr)						
Resident National Monument/Refuge	1.4	1.2	3.1	0.39	0.62 | 2.1	3.1
Subsistence Farmer	1.5	1.0	3.4	0.36	0.60 | 1.8	2.8
Hazard Index [h]						
Resident National Monument/Refuge	0.18	0.62	0.21	0.50	0.57 | 0.14	0.63
Subsistence Farmer	0.19	0.64	0.21	0.52	0.57 | 0.14	0.63

[a] Background or reference area data unavailable for calculating incremental risk. Groundwater risks are calculated using data aggregated across all monitoring wells in a decision area, excluding those wells identified for supplemental analysis.
[b] Results do not include data for well 199-B5-2. See Table 6-20.
[c] Results do not include data for well 199-K-109A. See Table 6-20.
[d] Results do not include data for wells 199-N-46 and 199-N-67. See Table 6-20.
[e] Results do not include data for wells 199-D5-99, 199-D5-41, and 199-D5-104. See Table 6-21.
[f] First and second set of values correspond to the 100-FR-3 and 100-IU-2/100-IU-6 groundwater operable units, respectively. Results do not include data for well 199-F8-3. See Table 6-20.
[g] Results do not include data for wells 699-13-3A, 399-2-2, and 399-3-1. See Table 6-21.
[h] For the Subsistence Farmer, the higher of the adult and child CTE hazard index result is shown. The child RME hazard index always exceeds the adult RME hazard index.

CTE = central tendency exposure
RME = reasonable maximum exposure

Table 6-19. Groundwater Risk Assessment Results for the Confederated Tribes of the Umatilla Indian Reservation Resident and Yakama Resident Scenarios.

Scenario [a]	Water Use	100-B/C [b]	100-K [c]	100-N [d]	100-D/ 100-H [e]	100-F/100-IU-2/ 100-IU-6 [f]	300 [g]
Cancer Risk							
CTUIR	Domestic	7.E-04	3.E-03	7.E-03	2.E-04	3.E-04 | 9.E-04	3.E-03
	Sweat lodge	4.E-03	1.E-02	6.E-03	–[h]	6.E-03 | 5.E-04	6.E-03
	Total	4.E-03	1.E-02	1.E-02	–[h]	6.E-03 | 1.E-03	9.E-03
Yakama	Domestic	7.E-04	3.E-03	7.E-03	2.E-04	3.E-04 | 9.E-04	3.E-03
	Sweat lodge	7.E-04	–[h]	2.E-03	2.E-04	1.E-04 | 1.E-03	5.E-03
	Total	1.E-03	–[h]	9.E-03	4.E-04	5.E-04 | 2.E-03	8.E-03
Radiation Dose (mrem/yr)							
CTUIR	Domestic	17	66	223	5.6	8.8 | 19	75
	Sweat lodge	20	230	180	20	30 | 31	370
	Total	37	290	410	26	39 | 50	450
Yakama	Domestic	17	66	224	5.6	8.8 | 19	76
	Sweat lodge	62	1,140	134	14	9.0 | 144	448
	Total	79	1,200	360	20	18 | 160	520
Hazard Index							
CTUIR	Domestic (adult)	1.0	4.2	2.1	12	3.7 | 2.0	7.2
	Sweat lodge (adult)	5.7	23	17	50	11 | 56	14
	Total adult	6.8	27	19	62	15 | 58	21
	Domestic (child)	2.3	9.1	4.5	26	7.9 | 4.1	15
Yakama	Domestic (adult)	1.0	4.2	2.1	12	3.7 | 2.0	7.2
	Sweat lodge (adult)	2.5	6.2	2.4	29	4.7 | 1.1	2.8
	Total adult	3.5	10	4.4	40	8.4 | 3.0	10
	Domestic (child)	2.4	9.4	4.6	27	8.2 | 4.3	16

[a] Background or reference area data unavailable for calculating incremental risk. Groundwater risks are calculated using data aggregated across all monitoring wells in a decision area, excluding those wells identified for supplemental analysis.
[b] Results do not include data for well 199-B5-2. See Table 6-22.
[c] Results do not include data for well 199-K-109A. See Table 6-22.
[d] Results do not include data for wells 199-N-46 and 199-N-67. See Table 6-22.
[e] Results do not include data for wells 199-D5-99, 199-D5-41, and 199-D5-104. See Table 6-23.
[f] First and second set of values correspond to the 100-FR-3 and 100-IU-2/100-IU-6 groundwater operable units, respectively. Results do not include data for well 199-F8-3. See Table 6-22.
[g] Results do not include data for wells 699-13-3A, 399-2-2, and 399-3-1. See Table 6-23.
[h] A cancer risk above 1 in 100 was calculated; see Section 6.9 of the text.

CTUIR = Confederated Tribes of the Umatilla Indian Reservation

Table 6-19. Groundwater Risk Assessment Results for the Confederated Tribes of the Umatilla Indian Reservation Resident and Yakama Resident Scenarios.

Scenario [a]	Water Use	100-B/C [b]	100-K [c]	100-N [d]	100-D/ 100-H [e]	100-F/100-IU-2/ 100-IU-6 [f]	300 [g]

Table 6-20. Groundwater Risk Assessment Results for Individual Wells in the 100-B/C, 100-K, 100-N, and 100-F/100-IU-2/100-IU-6 Areas: Resident National Monument/Refuge and Subsistence Farmer Scenarios.

Scenario	100-B/C	100-K	100-N		100-F/100-IU-2/ 100-IU-6
	199-B5-2	199-K-109A	199-N-46	199-N-67	199-F8-3
Reasonable Maximum Exposure					
Cancer Risk					
Resident National Monument/Refuge	4E-04	8E-03	1E-02	–[a]	8E-05
Subsistence Farmer	5E-04	8E-03	1E-02	–[a]	8E-05
Radiation Dose (mrem/yr)					
Resident National Monument/Refuge	25	480	820	1,100	4.7
Subsistence Farmer	25	630	1,100	1,500	4.5
Hazard Index [b]					
Resident National Monument/Refuge	0.61	1.5	0.96	1.5	1.3
Subsistence Farmer	1.1	2.5	1.6	2.5	2.1
Central Tendency Exposure					
Cancer Risk					
Resident National Monument/Refuge	2E-05	7E-04	1E-03	2E-03	9E-06
Subsistence Farmer	2E-05	5E-04	9E-04	2E-03	6E-06
Radiation Dose (mrem/yr)					
Resident National Monument/Refuge	5.3	170	300	570	2.1
Subsistence Farmer	4.7	190	350	660	1.7
Hazard Index [b]					
Resident National Monument/Refuge	0.34	0.37	0.52	0.70	0.67
Subsistence Farmer	0.37	0.37	0.52	0.70	0.67

[a] A cancer risk above 1 in 100 was calculated; see Section 6.9 of the text.
[b] For the Subsistence Farmer, the higher of the adult and child hazard index result is shown.

Table 6-21. Groundwater Risk Assessment Results for Individual Wells in the 100-B/C, 100-K, 100-N, and 100-F/100-IU-2/100-IU-6 Areas: Confederated Tribes of the Umatilla Indian Reservation Resident and Yakama Resident Scenarios.

Scenario	Water Use	100-B/C	100-K	100-N		100-F/100-IU-2/ 100-IU-6
		199-B5-2	199-K-109A	199-N-46	199-N-67	199-F8-3
Cancer Risk						
CTUIR	Domestic	2E-03	–[a]	–[a]	–[a]	3E-04
	Sweat lodge	4E-03	1E-02	–[a]	–[a]	1E-03
	Total	5E-03	–[a]	–[a]	–[a]	2E-03
Yakama	Domestic	2E-03	–[a]	–[a]	–[a]	3E-04
	Sweat lodge	3E-03	1E-02	–[a]	–[a]	4E-04
	Total	4E-03	–[a]	–[a]	–[a]	7E-04
Radiation Dose (mrem/yr)						
CTUIR	Domestic	36	930	1,600	2,200	6.6
	Sweat lodge	57	740	1,200	1,700	26
	Total	93	1,700	2,800	3,800	33
Yakama	Domestic	37	930	1,600	2,200	6.7
	Sweat lodge	260	480	730	990	43
	Total	300	1,400	2,300	3,200	50
Hazard Index						
CTUIR	Domestic (adult)	0.78	2.1	1.3	2.1	1.7
	Sweat lodge (adult)	4.0	37	110	12	3.9
	Total adult	4.8	39	110	14	5.6
	Domestic (child)	1.7	4.3	2.7	4.3	3.6
Yakama	Domestic (adult)	0.78	2.1	1.3	2.1	1.7
	Sweat lodge (adult)	1.9	1.1	1.2	0.85	1.3
	Total adult	2.7	3.2	2.5	2.9	3.0
	Domestic (child)	1.8	4.5	2.8	4.5	3.8

[a] A cancer risk above 1 in 100 was calculated; see Section 6.9 of the text.
CTUIR = Confederated Tribes of the Umatilla Indian Reservation

Table 6-22. Groundwater Risk Assessment Results for Individual Wells in the 100-D/100-H and 300 Areas: Resident National Monument/Refuge and Subsistence Farmer Scenarios.

Scenario	100-D/100-H			300		
	199-D5-41	199-D5-99	199-D5-104	399-2-2	399-3-1	699-13-3A
Reasonable Maximum Exposure						
Cancer Risk						
Resident National Monument/Refuge	2E-06	–[a]	–[a]	4E-04	7E-07	1E-02
Subsistence Farmer	2E-06	–[a]	–[a]	4E-04	9E-07	1E-02
Radiation Dose (mrem/yr)						
Resident National Monument/Refuge	0.12	–[a]	–[a]	15	–[a]	630
Subsistence Farmer	0.12	–[a]	–[a]	15	–[a]	590
Hazard Index [b]						
Resident National Monument/Refuge	40	420	120	9.5	12	1.1
Subsistence Farmer	77	800	230	16	20	1.8
Central Tendency Exposure						
Cancer Risk						
Resident National Monument/Refuge	3E-07	–[a]	–[a]	6E-05	6E-08	1E-03
Subsistence Farmer	2E-07	–[a]	–[a]	6E-05	1E-07	9E-04
Radiation Dose (mrem/yr)						
Resident National Monument/Refuge	0.074	–[a]	–[a]	9.0	–[a]	280
Subsistence Farmer	0.061	–[a]	–[a]	8.1	–[a]	230
Hazard Index [b]						
Resident National Monument/Refuge	13	140	56	4.3	5.1	0.62
Subsistence Farmer	15	160	63	4.3	5.1	0.62

[a] No contaminants of potential concern were identified for the health assessment endpoint.
[b] For the Subsistence Farmer, the higher of the adult and child hazard index result is shown.

Table 6-23. Groundwater Risk Assessment Results for Individual Wells in the 100-D/100-H and 300 Areas: Confederated Tribes of the Umatilla Indian Reservation Resident and Yakama Resident Scenarios.

Scenario	Groundwater Risk	100-D/100-H			300		
		199-D5-41	199-D5-99	199-D5-104	399-2-2	399-3-1	699-13-3A
Cancer Risk							
CTUIR	Domestic	8E-06	–[a]	–[a]	1E-03	2E-06	–[b]
	Sweat lodge	–[b]	–[b]	–[b]	5E-03	3E-07	–[b]
	Total	–[b]	–[b]	–[b]	7E-03	3E-06	–[b]
Yakama	Domestic	8E-06	–[a]	–[a]	1E-03	2E-06	–[b]
	Sweat lodge	1E-05	–[a]	–[a]	5E-04	9E-07	–[b]
	Total	2E-05	–[a]	–[a]	2E-03	3E-06	–[b]
Radiation Dose (mrem/yr)							
CTUIR	Domestic	0.17	–[a]	–[a]	22	–[a]	880
	Sweat lodge	0.28	–[a]	–[a]	330	–[a]	1,400
	Total	0.45	–[a]	–[a]	350	–[a]	2,300
Yakama	Domestic	0.18	–[a]	–[a]	23	–[a]	890
	Sweat lodge	1.3	–[a]	–[a]	23	–[a]	6,800
	Total	1.5	–[a]	–[a]	45	–[a]	7,700
Hazard Index							
CTUIR	Domestic (adult)	51	530	150	13	16	1.5
	Sweat lodge (adult)	230	2,300	670	5.2	6.3	3.1
	Total adult	280	2,900	820	18	22	4.6
	Domestic (child)	110	1,200	340	27	34	3.1
Yakama	Domestic (adult)	51	530	150	13	16	1.5
	Sweat lodge (adult)	150	1,500	440	4.8	6.0	0.57
	Total adult	200	2,100	590	18	22	2.0
	Domestic (child)	120	1,200	350	28	35	3.2

[a] COPCs do not have toxicity criteria for applicable exposure routes.
[b] A cancer risk above 1 in 100 was calculated; see Section 6.9 of the text.

COPC = contaminant of potential concern
CTUIR = Confederated Tribes of the Umatilla Indian Reservation

Table 6-24. Uncertain Contaminants of Potential Concern for Each Groundwater Operable Unit. (2 Pages)

Operable Unit	Contaminant of Potential Concern	Sample Size	Number of Detects	Maximum Detect Value (µg/L or pCi/L)	EPA RSL or PRG [a] (µg/L or pCi/L)
100-BC-5	Chloroform	9	4	0.62	0.19
100-FR-3	Carbon-14	12	3	11.9	1.29
100-HR-3	Aroclor-1254	20	1	8.3	0.034
	Molybdenum	24	17	49.6	180
100-F/100-IU-2/ 100-IU-6	Aluminum	4	3	1,290	37,000
	Bis[2-ethylhexyl] phthalate	1	1	4,967	4.8
	Chloroform	22	4	2.3	0.19
	Di-n-octylphthalate	1	1	42	NA
	Methylenechloride	22	8	290	4.8
	Uranium (as soluble salts)	1	1	2.21	110
	Uranium-233/234	2	2	1.56	0.674
	Uranium-238	2	2	0.985	0.547
100-KR-4	Chloroform	20	14	2.0	0.19
	Cobalt	263	20	20.2	11
	Heptachlor epoxide	11	3	1.1	0.0074
	Methylenechloride	20	9	8.9	4.8
100-NR-2	Arsenic	19	5	13.8	0.045
	Benzene	9	1	0.95	0.41
	Chloroform	9	3	1.9	0.19
	Copper	42	10	90.2	1,500
	Dichlorodiphenyldichloroethane	15	2	1.6	0.28
	Dichlorodiphenyltrichloroethane	15	2	0.083	0.20
	Ethylbenzene	5	1	3.9	1.5
	gamma-Chlordane	15	2	0.5	0.19
	Heptachlor	15	2	0.36	0.015
	Heptachlor epoxide	15	2	0.037	0.0074
	Molybdenum	19	5	28	180
	Xylenes (total)	9	1	3.7	200

Table 6-24. Uncertain Contaminants of Potential Concern for Each Groundwater Operable Unit. (2 Pages)

Operable Unit	Contaminant of Potential Concern	Sample Size	Number of Detects	Maximum Detect Value (µg/L or pCi/L)	EPA RSL or PRG [a] (µg/L or pCi/L)
300-FF-5	1,2-Dichloroethene (total)	55	3	27	330
	Nickel (as soluble salts)	108	48	37.2	730
	Nickel-63	13	5	8.93	71.1

[a] Values are for residential tap water, calculated using a cancer risk threshold of 1×10^{-6} (radionuclides and chemical carcinogens) or hazard quotient of 1.0 (noncarcinogenic chemicals). Chemical RSLs were obtained at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm#content. Radionuclide PRGs were obtained at http://epa-prgs.ornl.gov/radionuclides/.

EPA = U.S. Environmental Protection Agency
NA = not available
PRG = preliminary remediation goal
RSL = regional screening level

Table 6-25. Groundwater Risk Assessment Results for the Confederated Tribes of the Umatilla Indian Reservation Resident Scenario Without Gas-Phase Inhalation of Nonvolatiles in the Sweat Lodge.

Scenario [a]	Water Use	100-B/C [b]	100-K [c]	100-N [d]	100-D/ 100-H [e]	100-F/100-IU-2/ 100-IU-6 [f]	300 [g]
Cancer Risk							
CTUIR	Domestic	7.E-04	3.E-03	7.E-03	2.E-04	3.E-04 | 9.E-04	3.E-03
	Sweat lodge	3.E-04	4.E-03	2.E-03	9.E-05	1.E-04 | 5.E-04	2.E-03
	Total	1.E-03	7.E-03	1.E-02	3.E-04	4.E-04 | 1.E-03	5.E-03
Radiation Dose (mrem/yr)							
CTUIR	Domestic	17	66	223	5.6	8.8 | 19	75
	Sweat lodge	16	212	105	4.4	4.7 | 30	100
	Total	34	280	330	10	14 | 49	180
Hazard Index							
CTUIR	Domestic (adult)	1.0	4.2	2.1	12	3.7 | 2.0	7.2
	Sweat lodge (adult)	0.59	2.0	0.89	6.8	1.6 | 0.70	2.4
	Total adult	1.6	6.2	3.0	19	5.3 | 2.7	9.6
	Domestic (child)	2.3	9.1	4.5	26	7.9 | 4.1	15

[a] Background or reference area data unavailable for calculating incremental risk. Groundwater risks are calculated using data aggregated across all monitoring wells in a decision area, excluding those wells identified for supplemental analysis.
[b] Results do not include data for well 199-B5-2. See Table 6-22.
[c] Results do not include data for well 199-K-109A. See Table 6-22.
[d] Results do not include data for wells 199-N-46 and 199-N-67. See Table 6-22.
[e] Results do not include data for wells 199-D5-99, 199-D5-41, and 199-D5-104. See Table 6-23.
[f] First and second set of values correspond to the 100-FR-3 and 100-IU-2/100-IU-6 groundwater operable units, respectively. Results do not include data for well 199-F8-3. See Table 6-22.
[g] Results do not include data for wells 699-13-3A, 399-2-2, and 399-3-1. See Table 6-23.

CTUIR = Confederated Tribes of the Umatilla Indian Reservation

Table 7-1. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Results Exceeding 1 x 10^{-4} or Child Hazard Index Results Above 1.0 for the Interim Action Record of Decision Scenario. (2 Pages)

Waste Site Name	Cancer Risk		Key Cancer Risk Drivers		Noncancer Hazard Index	Key Noncancer Hazard Drivers
	Chemical	Radionuclide	Chemical	Radionuclide	Chemical	Chemical
100-B/C Area						
116-B-6A	--	5E-04	--	Cesium-137 (3E-04), strontium-90 (2E-04)	0.008	Calculated total uranium (0.007)
116-B-11	--	3E-04	--	Europium-152 (2E-04), cesium-137 (4E-05), cobalt-60 (3E-05), europium-154 (2E-05), strontium-90 (1E-05)	0.03	Calculated total uranium (0.02), hexavalent chromium (0.007)
116-B-14	--	4E-04	--	Europium-152 (2E-04), strontium-90 (7E-05) cesium-137 (4E-05), uranium-238 (4E-06)	0.02	Calculated total uranium (0.02)
132-B-6	--	2E-04	--	Europium-152 (1E-04), cesium-137 (8E-05)	0.02	Mercury (0.01), calculated total uranium (0.009)
116-C-1	--	2E-04	--	Europium-152 (8E-05), cesium-137 (5E-05), strontium-90 (3E-05)	0.01	Calculated total uranium (0.01)
116-C-5	--	2E-04	--	Europium-152 (9E-05), cesium-137 (5E-05), strontium-90 (2E-05), europium-154 (1E-05), cobalt-60 (1E-05)	0.01	Calculated total uranium (0.01)
100-D/100-H Area						
100-D-48:3	--	2E-04	--	Cesium-137 (2E-04), strontium-90 (3E-05)	0.009	Calculated total uranium (0.006), hexavalent chromium (0.002)
116-DR-9	--	4E-04	--	Cesium-137 (4E-04), europium-152 (3E-05), strontium-90 (1E-05)	0.008	Hexavalent chromium (0.008)

Table 7-1. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Results Exceeding 1 x 10^{-4} or Child Hazard Index Results Above 1.0 for the Interim Action Record of Decision Scenario. (2 Pages)

Waste Site Name	Cancer Risk		Key Cancer Risk Drivers		Noncancer Hazard Index	Key Noncancer Hazard Drivers
	Chemical	Radionuclide	Chemical	Radionuclide	Chemical	Chemical
100-F/100-IU-2/100-IU-6 Area						
116-F-14	4E-06	3E-04	Arsenic (4E-06)	Europium-152 (3E-04), cesium-137 (4E-05), strontium-90 (1E-05)	0.1	Arsenic (0.1)
100-K Area						
100-K-56:1	--	2E-04	--	Europium-152 (1E-04), cesium-137 (4E-05), strontium-90 (2E-05), cobalt-60 (2E-05)	0.01	Calculated total uranium (0.006), hexavalent chromium (0.004)
116-K-1	--	2E-04	--	Strontium-90 (1E-04), cesium-137 (5E-05), europium-152 (2E-05)	0.001	Hexavalent chromium (0.001)
300 Area						
316-1	3E-05	2E-04	Arsenic (2E-05), Aroclor-1248 (6E-06)	Cobalt-60 (1E-04), uranium-238 (5E-05), uranium-235 (2E-05), uranium-233/234 (1E-05), cesium-137 (1E-05)	1.4	Arsenic (0.5), mercury (0.6), Aroclor-1254 (0.04)
316-2	1E-05	3E-04	Arsenic (1E-05), Aroclor-1248 (2E-06)	Uranium-238 (2E-04), uranium-235 (8E-05), uranium-233/234 (4E-05), cobalt-60 (2E-05)	1.0	Calculated total uranium (0.7), arsenic (0.3)
316-5	4E-06	5E-04	Arsenic (3E-06), Aroclor-1254 (1E-07), Aroclor-1248 (1E-07)	Uranium-235 (1E-04), uranium-238 (2E-04), cesium-137 (8E-05), uranium-233/234 (7E-05)	1.2	Calculated total uranium (1), arsenic (0.09)

NOTE: Key chemical drivers are the chemicals or radionuclides that contribute most to the total chemical or radionuclide risk or hazard. The risk or hazard quotient value for the individual drivers is shown in parentheses after the name of the driver chemical or radionuclide. Risks and hazard indices are based on reasonable maximum exposure point concentrations.

-- = not applicable

Table 7-2. Broad Area Risk Assessment Results, Nonresident Tribal Scenario. (2 Pages)

Exposure Media	Cancer Risk			Child Hazard Index
	Present Day	2075	2150	
100-B/C ROD Area				
All media [a]	1E-02	1E-02	1E-02	79
Soil, sediment, water	7E-05	4E-05	4E-05	0.96
Plants	1E-02	1E-02	1E-02	74
Game [c]	2E-04	2E-04	2E-04	4.5
Sculpin [b]	[c]	--	--	13
100-K ROD Area				
All media [a]	2E-02	1E-02	1E-02	84
Soil, sediment, water	6E-05	3E-05	3E-05	0.71
Plants	2E-02	1E-02	1E-02	78
Game [c]	2E-04	2E-04	2E-04	4.5
Sculpin [b]	3E-04	3E-04	3E-04	13
100-N ROD Area				
All media [a]	1E-02	1E-02	1E-02	73
Soil, sediment, water	2E-04	2E-04	2E-04	0.76
Plants	1E-02	1E-02	1E-02	67
Game [c]	2E-04	2E-04	2E-04	4.5
Sculpin [b]	[d]	--	--	11
100-D/100-H ROD Area				
All media [a]	1E-02	1E-02	1E-02	81
Soil, sediment, water	6E-05	3E-05	3E-05	0.78
Plants	1E-02	1E-02	1E-02	76
Game [c]	2E-04	2E-04	2E-04	4.5
Sculpin [b]	[c]	--	--	25
100-F/100-IU-2/100-IU-6 ROD Area				
All media [a]	1E-02	1E-02	1E-02	95
Soil, sediment, water	1E-04	3E-05	3E-05	0.94
Plants	1E-02	1E-02	1E-02	89
Game [c]	2E-04	2E-04	2E-04	4.5
Sculpin [b]	[c]	--	--	17
300 ROD Area				
All media [a]	1E-02	1E-02	1E-02	84
Soil, sediment, water	7E-05	3E-05	3E-05	0.93
Plants	1E-02	1E-02	1E-02	78

Table 7-2. Broad Area Risk Assessment Results, Nonresident Tribal Scenario. (2 Pages)

Exposure Media	Cancer Risk			Child Hazard Index
	Present Day	2075	2150	
Game [c]	2E-04	2E-04	2E-04	4.5
Sculpin [b]	[c]	--	--	10

[a] "All media" pathway sum does not include contribution from fish ingestion.
[b] Screening-level result employing near-shore COPC concentrations in sculpin, a small fish with a limited home range collected in each ROD area.
[c] Not available. Carbon-14, the only carcinogenic COPC in near-shore biota, was not analyzed in samples from this ROD area.
[d] Not detected. Carbon-14, the only carcinogenic COPC in near-shore biota, was analyzed but not detected in samples from this ROD area.
[c] The game ingestion exposure pathway is evaluated for all ROD Areas combined in the upland environment.
-- = not applicable
COPC = contaminant of potential concern
ROD = record of decision

Table 7-3. Summary of Key Exposure Pathways and Contaminants of Potential Concern Other than Arsenic for Cancer Risk Results for the Nonresident Tribal Scenario.

ROD Area	COPC Other than Arsenic [a]	Pathway	Fraction of Total Risk (Without Arsenic)	Present-Day Total Risk (Without Arsenic)
100-B/C	Technetium-99	nativePlantIngestion	0.60	9.E-04
100-K	Carbon-14	nativePlantIngestion	0.93	4.E-03
100-N	Strontium-90	nativePlantIngestion	0.37	7.E-04
	Strontium-90	surfaceWaterIngestion	0.24	
100-D/100-H	Strontium-90	nativePlantIngestion	0.22	3.E-04
	Benzo[a]pyrene	gameIngestion	0.19	
	Aroclor-1254	gameIngestion	0.12	
100-F/100-IU-2/100-IU-6	Technetium-99	nativePlantIngestion	0.46	7.E-04
300	Benzo[a]pyrene	gameIngestion	0.21	3.E-04
	Aroclor-1254	gameIngestion	0.13	
	Strontium-90	nativePlantIngestion	0.10	

[a] Details for other COPCs are shown in Appendix D-5 (Section 4 Results, Nonresident Tribal risk excel tables, electronic attachment).
COPC = contaminant of potential concern
ROD = record of decision

Table 7-4. Summary of Key Exposure Pathways and Contaminants of Potential Concern Other than Arsenic for Child Hazard Index Results for the Nonresident Tribal Scenario.

ROD Area	COPC Other than Arsenic [a]	Pathway	Fraction of Child HI (Without Arsenic)	Present-Day Total Child HI (Without Arsenic)
100-B/C	Cadmium	nativePlantIngestion	0.34	25
	Zinc	nativePlantIngestion	0.20	
100-K	Cadmium	nativePlantIngestion	0.37	32
	Zinc	nativePlantIngestion	0.25	
100-N	Cadmium	nativePlantIngestion	0.28	24
	Zinc	nativePlantIngestion	0.23	
	Copper	nativePlantIngestion	0.10	
100-D/100-H	Cadmium	nativePlantIngestion	0.31	27
	Zinc	nativePlantIngestion	0.25	
100-F/100-IU-2/100-IU-6	Cadmium	nativePlantIngestion	0.39	38
	Zinc	nativePlantIngestion	0.23	
300	Cadmium	nativePlantIngestion	0.29	25
	Zinc	nativePlantIngestion	0.20	
	Mercury	nativePlantIngestion	0.10	

[a] Details for other COPCs are shown in Appendix D-5 (Section 4 Results, Nonresident Tribal hazard excel tables, electronic attachment).

COPC = contaminant of potential concern
HI = hazard index
ROD = record of decision

Table 7-5. Local Area Present-Day Risk Assessment Results, Occupational Scenarios.

Scenario and Calculation	100-B/C	100-K	100-N	100-D/100-H	100-F/100-IU-2/100-IU-6	300
RME Cancer Risk (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
Industrial/Commercial: Soil, total risk [a]	19 | 24 | 2	6 | 7 | 0	1 | 1 | 0	3 | 31 | 1	25 | 18 | 1	3 | 14 | 0
Resident National Monument/Refuge: Soil, total risk [a]	1 | 39 | 5	1 | 11 | 1	1 | 1 | 0	2 | 32 | 1	1 | 42 | 1	1 | 13 | 3
RME Radiation Dose (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
Industrial/Commercial: Soil, total dose	45 | 0	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0
Resident National Monument/Refuge: Soil, total dose	44 | 1	13 | 0	2 | 0	35 | 0	44 | 0	17 | 0
RME Hazard Index (Number of Sites <1 | 1 – 10 | >10)						
Industrial/Commercial: Soil, hazard index	45 | 0 | 0	13 | 0 | 0	2 | 0 | 0	35 | 0 | 0	44 | 0 | 0	17 | 0 | 0
Resident National Monument/Refuge: Soil, hazard index	45 | 0 | 0	13 | 0 | 0	2 | 0 | 0	35 | 0 | 0	44 | 0 | 0	17 | 0 | 0

[a] Total risk includes chemicals and radionuclides.
RME = reasonable maximum exposure

Table 7-6. Local Area Present-Day Risk Assessment Results, Residential Scenarios.

Scenario and Calculation	100-B/C	100-K	100-N	100-D/100-H	100-F/100-IU-2/100-IU-6	300
RME Cancer Risk (Number of Sites <1E-06 | 1E-06 – 1E-04 | >1E-04)						
IAROD Residential Scenario: Soil, total risk [a, b]	12 | 27 | 6	1 | 10 | 2	1 | 1 | 0	2 | 31 | 2	4 | 39 | 1	1 | 13 | 3
Subsistence Farmer: Soil, total risk [a, b]	10 | 25 | 10	1 | 0 | 12	1 | 1 | 0	2 | 15 | 18	4 | 13 | 27	1 | 4 | 12
CTUIR: Soil, total risk [a, b]	9 | 16 | 20	1 | 0 | 12	1 | 1 | 0	2 | 6 | 27	4 | 2 | 38	1 | 4 | 12
Yakama: Soil, total risk [a, b]	9 | 14 | 22	1 | 0 | 12	1 | 1 | 0	2 | 6 | 27	4 | 2 | 38	1 | 4 | 12
RME Radiation Dose (Number of Sites ≤15 mrem/yr | >15 mrem/yr)						
IAROD Residential Scenario: Soil, total dose [c]	NC	NC	NC	NC	NC	NC
Subsistence Farmer: Soil, total dose [b]	38 | 7	10 | 3	2 | 0	32 | 3	41 | 3	14 | 3
CTUIR: Soil, total dose [b]	36 | 9	8 | 5	2 | 0	29 | 6	39 | 5	14 | 3
Yakama: Soil, total dose [b]	35 | 10	7 | 6	2 | 0	25 | 10	39 | 5	14 | 3
RME Hazard Index (Number of Sites <1 | 1 – 10 | >10)						
IAROD Residential Scenario: Soil, hazard index [b]	45 | 0 | 0	13 | 0 | 0	2 | 0 | 0	35 | 0 | 0	44 | 0 | 0	14 | 3 | 0
Subsistence Farmer: Soil, hazard index [b]	28 | 14 | 2	7 | 2 | 4	2 | 0 | 0	24 | 9 | 2	19 | 24 | 1	5 | 6 | 6
CTUIR: Soil, hazard index [b]	11 | 24 | 10	7 | 0 | 6	1 | 1 | 0	22 | 2 | 11	18 | 3 | 23	5 | 0 | 12
Yakama: Soil, hazard index [b]	11 | 23 | 11	7 | 0 | 6	1 | 1 | 0	22 | 4 | 9	18 | 2 | 24	5 | 0 | 12

[a] Total risk includes chemicals and radionuclides. For the IAROD scenario, the radionuclide risk component includes direct contact plus food pathways, whereas the chemical risk component includes the soil ingestion pathway only. The radionuclide and chemical risk components are shown separately in Table 7-1 for the IAROD scenario. For other scenarios shown on this table (Subsistence Farmer, CTUIR, and Yakama), both the radionuclide and chemical risk components include direct contact plus food pathways.

[b] Risks/dose/hazard indices include beef and milk ingestion from penned cattle (fed with fodder raised on soils represented by cleanup verification data) rather than grazed livestock.

[c] The purpose of the IAROD scenario evaluation was to present residual cancer risk and noncancer hazard for remediated waste sites, and therefore total dose was not calculated (see Section 2.8). All 156 of the remediated sites evaluated in the RCBRA met the IAROD remedial action goals and have been interim closed.

CTUIR = Confederated Tribes of the Umatilla Indian Reservation
IAROD = interim action record of decision
NC = not calculated
RCBRA = River Corridor Baseline Risk Assessment
RME = reasonable maximum exposure

Table 7-7. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results Exceeding 1 × 10^{-4} for the Industrial/Commercial Exposure Scenario.

Site Name	Site Type / Excavation Depth [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
100-B/C Decision Area							
116-B-11	RLW / 5 m	Europium-152, cobalt-60, europium-154	External radiation	**2E-04**	0.0038	7E-06	2E-06
116-B-14	RSW / 6 m	Europium-152	External radiation	**2E-04**	0.0038	8E-06	2E-06
100-D/100-H Decision Area							
116-DR-9	RLW / 4.75 m	Cesium-137, europium-152	External radiation	**2E-04**	0.00043	3E-05	5E-06
100-F/100-IU-2/100-IU-6 Decision Area							
116-F-14	RLW / 4.6 m	Europium-152	External radiation	**2E-04**	0.0051	7E-06	1E-06

NOTE: Industrial/Commercial RME hazard index was below the threshold of 1.0 for all remediated waste sites evaluated in this report.
Values in bold are higher than applicable threshold values.

[a] Additional information on site conditions is summarized in Table 2-8.
[b] Key COPCs are those contributing 10% or more by one exposure pathway to the total. They are entered in order of decreasing percent contribution to RME cancer risk.
[c] Results at years 2075 and 2150 illustrate the impact of radiological decay of radionuclide COPCs over time.

COPC = contaminant of potential concern
HI = hazard index
RLW = radioactive liquid waste
RME = reasonable maximum exposure
RSW = radioactive solid waste

Table 7-8. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results Exceeding 1 × 10^{-4} for the Resident National Monument/Refuge Exposure Scenario. (2 Pages)

Site Name	Site Type / Excavation Depth [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
100-B/C Decision Area							
116-B-11	RLW / 5 m	Europium-152, cobalt-60	External radiation	**3E-04**	0.017	1E-05	3E-06
116-B-14	RSW / 6 m	Europium-152	External radiation	**3E-04**	0.017	1E-05	3E-06
116-B-6A	RLW / 4.6 m	Cesium-137	External radiation	**2E-04**	0.013	4E-05	8E-06
132-B-6	RLW / 8.3 m	Europium-152, cesium-137	External radiation	**2E-04**	0.015	1E-05	3E-06
116-C-5	RLW / 4.6 m	Europium-152, cesium-137, cobalt-60, europium-154	External radiation	**2E-04**	0.015	1E-05	3E-06
100-K Decision Area							
100-K-56:1	RLW / 8.8 m	Europium-152, cobalt-60, cesium-137	External radiation	**2E-04**	0.0039	9E-06	2E-06
100-D/100-H Decision Area							
116-DR-9	RLW / 4.75 m	Cesium-137, europium-152	External radiation	**3E-04**	0.0024	5E-05	8E-06
100-F/100-IU-2/100-IU-6 Decision Area							
116-F-14	RLW / 4.6 m	Europium-152	External radiation	**3E-04**	0.0097	1E-05	2E-06
300 Decision Area							
316-1	RLW / 5.7 m	Cobalt-60	External radiation	**3E-04**	0.32	4E-05	4E-05
316-5	RLW / 6.3 m	Uranium-238, uranium-235, cesium-137	External radiation	**2E-04**	0.30	**2E-04**	**2E-04**

Table 7-8. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results Exceeding 1 × 10^{-4} for the Resident National Monument/Refuge Exposure Scenario. (2 Pages)

Site Name	Site Type / Excavation Depth [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
316-2	RLW / 7.5 m	Uranium-238, cobalt-60, uranium-235	External radiation	**2E-04**	0.27	1E-04	1E-04

NOTE: Resident National Monument/Refuge RME hazard index was below the threshold of 1.0 for all remediated waste sites evaluated in this report.
Values in bold are higher than applicable threshold values.

[a] Additional information on site conditions is summarized in Table 2-8.
[b] Key COPCs are those contributing 10% or more by one exposure pathway to the total. They are entered in order of decreasing percent contribution to RME cancer risk.
[c] Results at years 2075 and 2150 illustrate the impact of radiological decay of radionuclide COPCs over time.

COPC = contaminant of potential concern
HI = hazard index
RLW = radioactive liquid waste
RME = reasonable maximum exposure
RSW = radioactive solid waste

Table 7-9. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results Exceeding 1 × 10^{-4} [a] and Reasonable Maximum Exposure Child Hazard Index Results Above 1.0 for the Subsistence Farmer Exposure Scenario. (8 Pages)

Site Name	Site Type / Excavation Notes [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
100-B/C Decision Area							
116-B-6A	RLW / 4.6 m	Cesium-137, strontium-90	External radiation; milk, produce, and beef ingestion	**1E-03**	0.41	**2E-04**	5E-05
116-B-14	RSW / 6 m	Europium-152, strontium-90	External radiation; milk ingestion	**8E-04**	0.81	8E-05	2E-05
116-B-11	RLW / 5 m	Europium-152, cobalt-60	External radiation	**7E-04**	1.8 [d]	5E-05	2E-05
116-C-5	RLW / 4.6 m	Europium-152, cesium-137, cobalt-60	External radiation	**4E-04**	0.79	4E-05	1E-05
132-B-6	RLW / 8.3 m	Europium-152, cesium-137 (risk), mercury (HI)	External radiation	**4E-04**	**3.2**	4E-05	1E-05
116-C-2A	RLW / 9.15 m	Strontium-90, cobalt-60, europium-152	Milk, produce, and beef ingestion; external radiation	**4E-04**	1.6 [d]	6E-05	1E-05
116-C-1	RLW / 5 m	Europium-152, cesium-137	External radiation	**4E-04**	0.61	5E-05	1E-05
116-C-6	RLW / NA	Cesium-137, strontium-90, europium-152	External radiation; milk and produce ingestion	**2E-04**	0.15	4E-05	1E-05
100-B-8:2	RLW / 7.5 m	Europium-154, cobalt-60, europium-152	External radiation	**2E-04**	0.39	2E-05	8E-06

Table 7-9. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results Exceeding 1×10^{-4} [a] and Reasonable Maximum Exposure Child Hazard Index Results Above 1.0 for the Subsistence Farmer Exposure Scenario. (8 Pages)

Site Name	Site Type / Excavation Notes [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
116-B-1	RLW / 4.6 m	Europium-152, cobalt-60, europium-154	External radiation	**2E-04**	0.52	1E-05	8E-06
100-B-14:6	NRLW/ 0 m	Mercury	Beef and produce ingestion	2E-08	**19**	2E-08	2E-08
116-B-10	RLW / 2.44 m	Mercury	Beef and produce ingestion	4E-05	**17**	8E-06	7E-06
118-B-9	RSW / 0 m 60-m^2 area	Mercury, zinc	Beef, produce, and milk ingestion	2E-08	**6.9**	2E-08	2E-08
1607-B10	NRLW / 2.5 m	Mercury	Beef and produce ingestion	5E-06	**5.0**	2E-06	1E-06
116-B-9	RLW / 2.44 m 50-m^2 area	Mercury	Beef and produce ingestion	2E-05	**5.0**	8E-06	5E-06
128-C-1	NRSW / 4 m	Cadmium, mercury	Produce and beef ingestion	1E-05	**5.0**	1E-05	1E-05
100-B-14:7	NRLW/ 0 m	Mercury, cadmium, zinc	Beef, produce, and milk ingestion	2E-08	**3.1**	2E-08	2E-08
118-B-10	RSW / 3.21 m	Mercury	Beef and produce ingestion	1E-04	**2.9**	1E-05	8E-06
1607-B8	NRLW / 2.5 m	Mercury, Aroclor-1254	Beef, produce, and soil ingestion	8E-06	**2.1**	8E-06	8E-06
1607-B9	NRLW / 3.5 m	Mercury, cadmium	Beef and produce ingestion	2E-08	**2.0**	2E-08	2E-08

Table 7-9. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results Exceeding 1×10^{-4} [a] and Reasonable Maximum Exposure Child Hazard Index Results Above 1.0 for the Subsistence Farmer Exposure Scenario. (8 Pages)

Site Name	Site Type / Excavation Notes [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
100-K Decision Area							
116-KE-5	RLW / NA	Arsenic (risk), ethylene glycol, arsenic, mercury (HI)	Produce ingestion	**6E-04**	**7.5**	**6E-04**	**6E-04**
100-K-56:1	RLW / 8.8 m	Europium-152, cobalt-60, cesium-137	External radiation	**5E-04**	0.17	4E-05	9E-06
100-K-33	NRLW / 0.91 m <50-m^2 area	Arsenic (risk), mercury [c] (HI)	Produce ingestion; beef and produce ingestion	**5E-04**	**35**[c]	**5E-04**	**5E-04**
116-K-1	RLW / 11 m	Strontium-90, cesium-137	Milk, produce, and beef ingestion; external radiation	**4E-04**	0.0084	7E-05	1E-05
100-K-55:1	RLW / 8.8 m	Europium-152, europium-154, cobalt-60,	External radiation	**3E-04**	0.23	3E-05	9E-06
116-K-2	RLW / 7.6 m	Cesium-137, europium-152, europium-154	External radiation	**3E-04**	0.19	4E-05	1E-05
116-KW-3	RLW / 6.1 m	Europium-152, europium-154, cobalt-60,	External radiation	**3E-04**	0.20	2E-05	7E-06
116-KE-4	RLW / 4.3 m	Europium-152, europium-154, cobalt-60	External radiation	**2E-04**	0.18	2E-05	8E-06
100-K-30	NRLW / 1 m <50-m^2 area	Mercury [c]	Beef and produce ingestion	4E-04 [d]	**220** [c]	4E-04 [d]	4E-04 [d]

Table 7-9. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results Exceeding 1×10^{-4} [a] and Reasonable Maximum Exposure Child Hazard Index Results Above 1.0 for the Subsistence Farmer Exposure Scenario. (8 Pages)

Site Name	Site Type / Excavation Notes [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
100-K-31	NRLW / 0.61 m <50 m^2 area	Mercury [c]	Beef and produce ingestion	4E-04 [f]	**68** [c]	4E-04 [d]	4E-04 [d]
100-K-32	NRLW / 0.61 m <50 m^2 area	Mercury [c]	Beef and produce ingestion	4E-04 [f]	**32** [c]	4E-04 [d]	4E-04 [d]
100-N Decision Area							
Neither of the two remediated waste sites evaluated in the RCBRA have RME risk above 1E-04 or RME HI above 1.0.							
100-D/100-H Decision Area							
100-H-21	RLW / 5.6 m	Arsenic (risk and HI)	Produce ingestion; beef and produce ingestion	**2E-03**	**12**	**2E-03**	**2E-03**
116-H-1	RLW / 4.6 m	Arsenic (risk and HI)	Produce ingestion	**1E-03**	**5.9**	**1E-03**	**1E-03**
1607-H2	NRLW / 5.6 m	Arsenic (risk), mercury [c] (HI)	Produce ingestion	**1E-03**	**69** [c]	**1E-03**	**1E-03**
116-H-7	RLW / 4.8 m	Arsenic (risk and HI)	Produce ingestion	**1E-03**	**4.7**	**8E-04**	**8E-04**
118-DR-2:2	RLW / 4.6 m	Arsenic (risk and HI)	Produce ingestion	**8E-04**	**2.9**	**6E-04**	**5E-04**
116-DR-9	RLW / 4.75 m	Cesium-137	External radiation; milk ingestion	**7E-04**	0.054	1E-04	2E-05
100-H-5	RSW / 5.1 m	Arsenic (risk), arsenic and mercury (HI)	Produce ingestion; beef and produce ingestion	**7E-04**	**4.7**	**7E-04**	**7E-04**
100-H-17	RLW / 2.6 m	Arsenic (risk and HI)	Produce ingestion	**7E-04**	**3.0**	**6E-04**	**5E-04**

Table 7-9. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results Exceeding 1×10^{-4} [a] and Reasonable Maximum Exposure Child Hazard Index Results Above 1.0 for the Subsistence Farmer Exposure Scenario. (8 Pages)

Site Name	Site Type / Excavation Notes [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
100-H-24	NRSW / 4.6 m	Arsenic (risk and HI)	Produce ingestion	**7E-04**	**3.6**	**7E-04**	**7E-04**
122-DR-1:2	RLW / 4.6 m	Arsenic	Produce ingestion	**5E-04**	2.6 [f]	**5E-04**	**5E-04**
100-D-48:3	RLW / 5.7 m	Cesium-137, strontium-90	External radiation; milk ingestion	**4E-04**	0.17	8E-05	2E-05
100-D-49:4	RLW / 4.6 m	Europium-152	External radiation	**2E-04**	0.56	2E-05	8E-06
100-D-48:2	RLW / 6 m	Cesium-137, europium-152, cobalt-60	External radiation	**2E-04**	0.15	3E-05	1E-05
100-D-20	RSW / 2.1 m	Cesium-137, europium-152	External radiation	**2E-04**	0.25	3E-05	1E-05
116-D-1A	RLW / 4.6 m	Cesium-137, europium-152, strontium-90	External radiation; milk ingestion; produce ingestion	**2E-04**	0.16	3E-05	9E-06
100-D-48:4	RLW / 7 m	Cesium-137, europium-152, strontium-90	External radiation; milk ingestion	**2E-04**	0.21	3E-05	9E-06
100-F/100-IU-2/100-IU-6 Decision Area							
100-F-37	NRLW / 0 m 1-m^2 area	Arsenic (risk and HI)	Produce ingestion	**3E-03**	**16**	**3E-03**	**3E-03**
116-F-1	RLW / 4.5 m	Arsenic (risk and HI)	Produce ingestion	**1E-03**	**5.4**	**1E-03**	**1E-03**
116-F-14	RLW / 4.6 m	Europium-152, arsenic	External radiation; produce ingestion	**1E-03**	2.3 [d]	**4E-04**	**4E-04**
600-235	NRSW / 0 m (telephone cables)	Arsenic (risk), arsenic, cadmium (HI)	Produce ingestion	**7E-04**	**4.6**	**7E-04**	**7E-04**

Table 7-9. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results Exceeding 1×10^{-4} [a] and Reasonable Maximum Exposure Child Hazard Index Results Above 1.0 for the Subsistence Farmer Exposure Scenario. (8 Pages)

Site Name	Site Type / Excavation Notes [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
100-F-26:1	RLW / 0 m	Arsenic	Produce ingestion	**5E-04**	**3.3**	**5E-04**	**5E-04**
600-131	NRSW / 1.7 m	Arsenic	Produce ingestion	**5E-04**		**5E-04**	**5E-04**
600-23	NRSW / 5 m	Arsenic (risk), arsenic, Aroclor-1254 (HI)	Produce ingestion; produce, soil, and milk ingestion	**5E-04**	**5.0**	**5E-04**	**5E-04**
600-181	NRLW / NA	Arsenic	Produce ingestion	**5E-04**	2.8 [d]	**5E-04**	**5E-04**
628-1	NRSW / 1.2 m	Arsenic	Produce ingestion	**5E-04**	2.5 [d]	**5E-04**	**5E-04**
116-F-9	RLW / 5.7 m	Strontium-90, carbon-14	Milk, produce, and beef ingestion	**4E-04**	– [f]	7E-05	1E-05
116-F-6	RLW / 5.1 m	Strontium-90, cesium-137, europium-152	Milk, produce, and beef ingestion; external radiation	**3E-04**	0.015	6E-05	9E-06
UPR-100-F-2	RLW / 4.2 m	Europium-152	External radiation	**2E-04**	– [f]	9E-06	9E-07
116-F-10	RLW / 4.4 m	Cesium-137, europium-152	External radiation	**2E-04**	0.20	3E-05	9E-06
100-F-9	NRLW / 0 m 2.8-m^2 area	Mercury, arsenic	Beef and produce ingestion	4E-04 [d]	**7.0**	4E-04 [d]	4E-04 [d]
600-190	NRSW / 0.25 m	Arsenic, Aroclor-1254	Produce, soil, and milk ingestion	4E-04 [d]	**4.3**	4E-04 [d]	4E-04 [d]
100-F-7	NRLW / 0 m 4.4-m^2 area	Arsenic, mercury	Produce and beef ingestion	4E-04 [d]	**3.9**	4E-04 [d]	4E-04 [d]
100-F-26:7	NRLW / NA	Arsenic, mercury	Produce and beef ingestion	4E-04 [d]	**3.0**	4E-04 [d]	4E-04 [d]

Table 7-9. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results Exceeding 1 × 10^{-4} [a] and Reasonable Maximum Exposure Child Hazard Index Results Above 1.0 for the Subsistence Farmer Exposure Scenario. (8 Pages)

Site Name	Site Type / Excavation Notes [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
300 Decision Area							
316-1	RLW / 5.7 m	Arsenic, cobalt-60 (risk), copper, [c] mercury, [c] arsenic (HI)	Produce ingestion; External radiation; milk, produce, and beef ingestion	**3E-03**	**77** [c]	**2E-03**	**2E-03**
300-10	RSW / 1.8 m	Arsenic (risk and HI)	Produce ingestion	**2E-03**	**12**	**2E-03**	**2E-03**
316-2	RLW / 7.5 m	Arsenic (risk), arsenic, and uranium [c] (HI)	Produce ingestion; produce, poultry, milk, soil, and egg ingestion	**2E-03**	**25** [c]	**2E-03**	**2E-03**
618-12	RSW / NA	Arsenic (risk and HI)	Produce ingestion	**2E-03**	**12**	**2E-03**	**2E-03**
316-5	RLW / 6.3 m	Arsenic, uranium-238 (risk), uranium [c] (HI)	Produce ingestion; external radiation; poultry, milk, soil, and egg ingestion	**2E-03**	**27** [c]	**1E-03**	**1E-03**
300-50	RSW / 3.1 m	Arsenic (risk and HI)	Produce ingestion	**1E-03**	**12**	**1E-03**	**1E-03**
300-49	RSW / 3 m	Arsenic (risk and HI)	Produce ingestion	**7E-04**	**5.4**	**7E-04**	**7E-04**
618-5	RSW / 7 m	Arsenic (risk and HI)	Produce ingestion	**7E-04**	**3.9**	**7E-04**	**7E-04**
628-4	RSW / 5.7 m	Arsenic (risk), arsenic, Aroclor-1248 (HI)	Produce ingestion	**7E-04**	**6.7**	**7E-04**	**7E-04**

Table 7-9. Summary of Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results Exceeding 1×10^{-4} [a] and Reasonable Maximum Exposure Child Hazard Index Results Above 1.0 for the Subsistence Farmer Exposure Scenario. (8 Pages)

Site Name	Site Type / Excavation Notes [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
618-4	RSW / 11 m	Arsenic (risk and HI)	Produce ingestion	**5E-04**	**3.6**	**5E-04**	**5E-04**

NOTE: An RME Subsistence Farmer cancer risk of 5×10^{-4} and a child HI of 2.7 are calculated for arsenic for the upland reference area. In the 100-K, 100-D/100-H, 100-F/100-IU-2/100-IU-6, and 300 Decision Areas where arsenic is a COPC, sites where arsenic is the primary contributor to RME results below these levels are not included in the table.

Values in bold are higher than applicable threshold values.

[a] Excavation depth provided for all sites when available; site area provided when less than approximately 50 m^2. Additional information on site conditions is summarized in Table 2-8.

[b] Key COPCs are those contributing 10% or more by one exposure pathway to the total. They are entered in order of decreasing percent contribution to RME cancer risk; or, where cancer risk is $<1 \times 10^{-4}$, hazard index.

[c] Results at years 2075 and 2150 illustrate the impact of radiological decay of radionuclide COPCs over time.

[d] This value is related to an arsenic concentration below the RME soil concentration in the upland reference area.

[e] RME HI is likely to be biased in a conservative manner due to the use of linear plant uptake models with soil concentrations far above background levels.

[f] No COPCs with toxicity criteria related to noncancer health effects were identified at this remediated waste site.

COPC = contaminant of potential concern
HI = hazard index
NA = not available
NRLW = nonradioactive liquid waste
NRSW = nonradioactive solid waste
RCBRA = River Corridor Baseline Risk Assessment
RLW = radioactive liquid waste
RME = reasonable maximum exposure
RSW = radioactive solid waste

Table 7-10. Summary of Subsistence Farmer Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results at or Above 1 × 10^{-4} and Reasonable Maximum Exposure Child Hazard Index Results at or Above 1.0 for Contaminants of Potential Concern Other Than Arsenic at Sites Where Arsenic-Related Risks Exceed These Thresholds. (3 Pages)

Site Name	Site Type / Excavation Notes [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
100-B/C Decision Area							
Arsenic was not identified as a shallow zone soil COPC in the 100-B/C ROD Decision Area.							
100-K Decision Area							
No sites where arsenic was a risk driver were at or above 1 × 10^{-4} risk or child HI of 1.0 in the absence of arsenic.							
100-N Decision Area							
Arsenic was not identified as a shallow zone soil COPC in the 100-B/C ROD Decision Area.							
100-D/100-H Decision Area							
118-DR-2:2	RLW / 4.6 m	Cesium-137, technetium-99, europium-152, cobalt-60	External radiation; produce and milk ingestion	**3E-04**	0.21	7E-05	3E-05
116-H-1	RLW / 4.6 m	Europium-152, strontium-90, cesium-137	External radiation; milk and produce ingestion	**2E-04**	0.019	3E-05	5E-06
100-H-21	RLW / 5.6 m	Cesium-137, technetium-99, europium-152	External radiation; produce and milk ingestion	**1E-04**	0.17	4E-05	2E-05
116-H-7	RLW / 4.8 m	Europium-152, technetium-99	External radiation; produce ingestion	**1E-04**	0.27	3E-05	1E-05
100-H-17	RLW / 2.6 m	Strontium-90	Milk, produce, and beef ingestion	**1E-04**	0.20	3E-05	1E-05
100-H-5	RSW / 5.1 m	Mercury	Beef and produce ingestion	3E-05	**1.1**	1E-05	8E-06

Table 7-10. Summary of Subsistence Farmer Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results at or Above 1 × 10^{-4} and Reasonable Maximum Exposure Child Hazard Index Results at or Above 1.0 for Contaminants of Potential Concern Other Than Arsenic at Sites Where Arsenic-Related Risks Exceed These Thresholds. (3 Pages)

Site Name	Site Type / Excavation Notes [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
100-F/100-IU-2/100-IU-6 Decision Area							
116-F-14	RLW / 4.6 m	Europium-152	External radiation	**7E-04**	0.063	4E-05	6E-06
116-F-1	RLW / 4.5 m	Europium-152, carbon-14, cesium-137	External radiation; Produce ingestion	**1E-04**	0.024	5E-06	6E-07
100-F-9	NRLW / 0 m 2.8-m^2 area	Mercury	Beef and produce ingestion	9E-09	**4.9**	9E-09	9E-09
600-23	NRSW / 5 m	Aroclor-1254	Soil ingestion; milk and beef ingestion	3E-05	**2.6**	3E-05	3E-05
600-190	NRSW / 0.25 m	Aroclor-1254	Soil ingestion; milk and beef ingestion	2E-05	**2.2**	2E-05	2E-05
100-F-7	NRLW / 0 m 4.4-m^2 area	Mercury	Beef and produce ingestion	9E-09	**1.8**	9E-09	9E-09
100-F-37	NRLW / 0 m 1-m^2 area	Mercury, cadmium	Beef and produce ingestion	9E-09	**1.7**	9E-09	9E-09
300 Decision Area							
316-5	RLW / 6.3 m	Uranium-238, uranium-235	External radiation; poultry, milk, soil, and egg ingestion	**1E-03**	**25**	**1E-03**	**1E-03**
316-2	RLW / 7.5 m	Uranium-238, cobalt-60 (risk), uranium [c] (HI)	External radiation; poultry, milk, soil, and egg ingestion	**8E-04**	**18** [d]	**7E-04**	**6E-04**

Table 7-10. Summary of Subsistence Farmer Remediated Waste Site Reasonable Maximum Exposure Cancer Risk Results at or Above 1×10^{-4} and Reasonable Maximum Exposure Child Hazard Index Results at or Above 1.0 for Contaminants of Potential Concern Other Than Arsenic at Sites Where Arsenic-Related Risks Exceed These Thresholds. (3 Pages)

Site Name	Site Type / Excavation Notes [a]	Present-Day Key COPCs [b]	Present-Day Key Pathways	Present-Day Results		Year 2075 RME Risk Results [c]	Year 2150 RME Risk Results [c]
				RME Risk	RME HI		
316-1	RLW / 5.7 m	Cobalt-60 (risk) copper, [d] mercury [d] (HI)	External radiation; milk, produce, and beef ingestion	**7E-04**	**66** [d]	**3E-04**	**3E-04**
300-50	RSW / 3.1 m	Uranium-238 (risk), uranium (HI)	External radiation; poultry and milk ingestion; poultry milk, soil, and egg ingestion	**1E-04**	**6.3**	**1E-04**	**1E-04**
618-12	RSW / NA	Uranium-238 (risk), uranium (HI)	External radiation; poultry and milk ingestion; poultry milk, soil, and egg ingestion	**1E-04**	**3.7**	**1E-04**	**1E-04**

NOTE: Sites shown in this table are limited to those for which arsenic was the primary contributor to risks above 1×10^{-4} and/or child HI above 1.0.
Values in bold are higher than applicable threshold values.

[a] Excavation depth provided for all sites when available; site area provided when less than approximately 50 m^2. Additional information on site conditions is summarized in Table 2-8.

[b] Key COPCs are those contributing 10% or more by one exposure pathway to the total. They are entered in order of decreasing percent contribution to RME cancer risk or, where cancer risk is $<1 \times 10^{-4}$, hazard index.

[c] Results at years 2075 and 2150 illustrate the impact of radiological decay of radionuclide COPCs over time.

[d] RME HI is likely to be biased in a conservative manner due to the use of linear plant uptake models with soil concentrations far above background levels.

COPC = contaminant of potential concern
HI = hazard index
NA = not available
RME = reasonable maximum exposure
NRLW = nonradioactive liquid waste
NRSW = nonradioactive solid waste
RLW = radioactive liquid waste
ROD = record of decision
RSW = radioactive solid waste

Table 7-11. Preliminary Remediation Goals for Soil – Recreational Scenarios. (3 Pages)

Analyte	90th Percentile Background [a]	Residential IAROD Cleanup Level (Direct Exposure) [b]	Radionuclide PRGs for 100 and 300 Areas (10^{-4} Target Risk) [c]	Nonradionuclide PRGs for 100 and 300 Areas (10-6 Target Risk or Hazard Quotient of 1) [d]	Casual User			Avid Angler			Avid Hunter							
					All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ = 1) [f]	All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ = 1) [f]	All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	Direct Contact PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	Direct Contact PRG (Cancer Risk; 10^{-6} Target Risk)	Food Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ = 1) [f]	Direct Contact PRG (Hazard; HQ = 1) [f]	Food Pathways PRG (Hazard; HQ = 1) [f]
Radionuclides (pCi/g)																		
Carbon-14	--	8.7	81	NA	330,000	3,300	--	290,000	2,900	--	300	580,000	3.0	5,800	3.0	--	--	--
Cesium-137	1.1	6.2	4.4	NA	88	0.88	--	33	0.33	--	33	66	0.33	0.66	0.69	--	--	--
Cobalt-60	0.0084	1.4	3.1	NA	53	0.53	--	20	0.20	--	35	39	0.35	0.39	2.8	--	--	--
Curium-244	--	--	551	NA	8,500	85	--	7,600	76	--	14,000	15,000	140	150	2400	--	--	--
Europium-152	--	3.3	3.7	NA	60	0.60	--	22	0.22	--	45	45	0.45	0.45	110	--	--	--
Europium-154	0.033	3.1	4.4	NA	74	0.74	--	27	0.27	--	56	56	0.56	0.56	85	--	--	--
Nickel-63	--	--	605	NA	570,000	5,700	--	520,000	5,200	--	21,000	>1,000,000	210	11,000	210	--	--	--
Plutonium-239/240	0.025	35	203	NA	3,300	33	--	2,900	29	--	4,400	5,800	44	58	190	--	--	--
Strontium-90	0.18	4.5	2.3	NA	5,100	51	--	2,800	28	--	12	5,800	0.12	58	0.12	--	--	--
Technetium-99	--	5.8	15 [k]	NA	110,000	1,100	--	96,000	960	--	850	190,000	8.5	1,900	8.5	--	--	--
Uranium-233/234	1.1	1.1 [g]	140	NA	5,800	58	--	5,100	51	--	2300	10,000	23	100	30	--	--	--
Uranium-235	0.11	0.61	16	NA	280	2.8	--	110	1.1	--	200	220	2.0	2.2	29	--	--	--
Uranium-238	1.1	1.1 [g]	54	NA	1,100	11	--	470	4.7	--	670	940	6.7	9.4	23	--	--	--
Inorganics (mg/kg)																		
Aluminum	12,000	NA	NA	80,000	--	--	1,000,000	--	--	>1,000,000	--	--	--	--	--	>1,000,000	>1,000,000	>1,000,000
Antimony	5.0	32	NA	32	--	--	400	--	--	660	--	--	--	--	--	270	1,300	340
Arsenic	6.5	20 [g]	NA	0.67	--	4.9	280	--	6.0	420	--	--	0.37	13	0.38	69	920	74
Barium	130	5,600	NA	16,000	--	--	200,000	--	--	300,000	--	--	--	--	--	360,000	610,000	870,000
Beryllium	1.5	10 [h]	NA	160	--	20,000	2,000	--	7,600	3200	--	--	15,000	15,000	--	1,400	6,400	1,800
Boron	--	7,200	NA	16,000	--	--	200,000	--	--	330,000	--	--	--	--	--	5,500	660,000	5,500
Cadmium	0.81 [i]	14 [h]	NA	40	--	27,000	910	--	10,000	1300	--	--	20,000	20,000	--	210	3,000	220
Chromium	19	80,000	NA	120,000	--	--	>1,000,000	--	--	>1,000,000	--	--	--	--	--	140,000	>1,000,000	150,000
Copper	22	3,000	NA	3,200	--	--	40,000	--	--	66,000	--	--	--	--	--	420	130,000	430
Fluoride	2.8	4,800	NA	4,800	--	--	61,000	--	--	99,000	--	--	--	--	--	1,900	200,000	1,900
Hexavalent chromium	--	2.1 [g]	NA	240	--	4,100	3,000	--	1,500	4,900	--	--	3,000	3,000	--	290	9,800	300
Lead	10	350	NA	250	--	--	250	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.33	24	NA	13	--	--	300	--	--	490	--	--	--	--	--	0.26	980	0.26
Nickel	19	1,600	NA	1,600	--	190,000	20,000	--	70,000	31000	--	--	140,000	140,000	--	3,100	63,000	3,200
Nitrogen in nitrate	12	130,000	NA	29,000	--	--	>1,000,000	--	--	>1,000,000	--	--	--	--	--	>1,000,000	>1,000,000	--
Nitrogen in nitrite	--	8,000	NA	2,400	--	--	100,000	--	--	160,000	--	--	--	--	--	330,000	330,000	--
Selenium	0.78 [i]	400	NA	400	--	--	5,000	--	--	8,200	--	--	--	--	--	8.3	16,000	8.3
Silver	0.73	400	NA	400	--	--	5,000	--	--	8,200	--	--	--	--	--	1,300	16,000	1,500
Strontium (elemental)	--	48,000	NA	48,000	--	--	610,000	--	--	990,000	--	--	--	--	--	3,300	>1,000,000	3,300
Tin	--	48,000	NA	48,000	--	--	610,000	--	--	990,000	--	--	--	--	--	5,100	>1,000,000	5,200
Uranium (inorganic)	3.2	240	NA	240	--	--	610	--	--	990	--	--	--	--	--	710	2,000	1,100
Zinc	68	24,000	NA	24,000	--	--	300,000	--	--	490,000	--	--	--	--	--	500	990,000	500

Table 7-11. Preliminary Remediation Goals for Soil – Recreational Scenarios. (3 Pages)

Analyte	90th Percentile Background [a]	Residential IAROD Cleanup Level (Direct Exposure) [b]	Radionuclide PRGs for 100 and 300 Areas (10^{-4} Target Risk) [c]	Nonradionuclide PRGs for 100 and 300 Areas (10-6 Target Risk or Hazard Quotient of 1) [d]	Casual User			Avid Angler			Avid Hunter							
					All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ = 1) [f]	All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ = 1) [f]	All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	Direct Contact PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	Direct Contact PRG (Cancer Risk; 10^{-6} Target Risk)	Food Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ = 1) [f]	Direct Contact PRG (Hazard; HQ = 1) [f]	Food Pathways PRG (Hazard; HQ = 1) [f]
Organics (mg/kg)																		
2-Methylnaphthalene	--	320	NA	320	--	--	3,000	--	--	3,700	--	--	--	--	--	57	9,800	57
Acenaphthene	--	4,800	NA	4,800	--	--	44,000	--	--	55,000	--	--	--	--	--	630	150,000	630
Acenaphthylene [j]	--	4,800	NA	--	--	--	44,000	--	--	55,000	--	--	--	--	--	850	150,000	860
Aldrin	--	0.054	NA	0.054	--	0.36	24	--	0.38	31	--	--	0.0045	0.94	0.0045	0.97	78	0.98
alpha-Chlordane	--	2.9	NA	2.9	--	20	450	--	24	660	--	--	0.22	54	0.22	16	1,500	16
Anthracene	--	24,000	NA	24,000	--	--	220,000	--	--	280,000	--	--	--	--	--	5,700	740,000	5,700
Aroclor-1248	--	0.50	NA	0.50	--	2.8	15	--	2.8	18	--	--	0.061	7.3	0.061	1.0	48	1.0
Aroclor-1254	--	0.50	NA	0.50	--	2.8	15	--	2.8	18	--	--	0.069	7.3	0.07	1.2	48	1.2
Aroclor-1260	--	0.50	NA	0.50	--	2.8	15	--	2.8	18	--	--	0.17	7.3	0.17	2.7	48	2.9
Aroclor-1262	--	0.50	NA	0.50	--	2.8	15	--	2.8	18	--	--	0.17	7.3	0.17	2.7	48	2.9
Benzo[a]anthracene	--	1.4	NA	1.4	--	3.1	--	--	3.1	--	--	--	0.046	8.1	0.046	--	--	--
Benzo[a]pyrene	--	0.14	NA	0.14	--	0.31	--	--	0.31	--	--	--	0.0055	0.81	0.0055	--	--	--
Benzo[b]fluoranthene	--	1.4	NA	1.4	--	3.1	--	--	3.1	--	--	--	0.058	8.1	0.058	--	--	--
Benzo[ghi]perylene [j]	--	2,400	NA	--	--	--	22,000	--	--	28,000	--	--	--	--	--	1,900	74,000	1,900
Benzo[k]fluoranthene	--	1.4	NA	1.4	--	3.1	NA	--	3.1	--	--	--	0.058	8.1	0.058	--	--	--
beta-1,2,3,4,5,6-Hexachlorocyclohexane	--	0.77	NA	0.56	--	3.9	270	--	4.7	400	--	--	0.018	11	0.018	4.1	890	4.1
Bis[2-ethylhexyl] phthalate	--	71	NA	71	--	430	16,000	--	460	21,000	--	--	4.4	1100	4.4	520	52,000	530
Chrysene	--	14	NA	14	--	31	--	--	31	--	--	--	0.46	81	0.46	--	--	--
Dibenz[a,h]anthracene	--	1.4	NA	1.4	--	0.54	--	--	0.55	--	--	--	0.013	1.4	0.013	--	--	--
Dichlorodiphenyldi-chloroethylene	--	2.9	NA	2.9	--	21	--	--	26	--	--	--	0.25	58	0.25	--	--	--
Dichlorodiphenyltri-chloroethane	--	2.9	NA	2.9	--	21	470	--	26	700	--	--	0.38	58	0.38	27	1,500	28
Dichloroprop [j]	--	640	NA	--	--	--	6,300	--	--	8,200	--	--	--	--	--	95	21,000	95
Dieldrin	--	0.063	NA	0.063	--	0.38	39	--	0.40	51	--	--	0.0028	1.0	0.0028	0.95	130	0.96
Endosulfan I	--	480	NA	480	--	--	4,700	--	--	6,200	--	--	--	--	--	82	16,000	82
Endosulfan II	--	480	NA	480	--	--	4,700	--	--	6,200	--	--	--	--	--	82	16,000	82
Endosulfan sulfate	--	480	NA	--	--	--	4,700	--	--	6,200	--	--	--	--	--	79	16,000	79
Endrin aldehyde	--	24	NA	--	--	--	240	--	--	310	--	--	--	--	--	6.7	780	6.7
Ethylene glycol	--	160,000	NA	--	--	--	>1,000,000	--	--	>1,000,000	--	--	--	--	--	600,000	>1,000,000	680,000
Fluoranthene	--	3,200	NA	3,200	--	--	30,000	--	--	37,000	--	--	--	--	--	990	98,000	1,000
Fluorene	--	3,200	NA	3,200	--	--	30,000	--	--	37,000	--	--	--	--	--	650	98,000	660
gamma-Chlordane	--	2.9	NA	--	--	20	450	--	24	660	--	--	0.22	54	0.22	16	1,500	16
Indeno[1,2,3-cd]pyrene	--	1.4	NA	1.4	--	3.1	--	--	3.1	--	--	--	0.081	8.10	0.08	--	--	--
Methoxychlor	--	400	NA	400	--	--	3,900	--	--	5,100	--	--	--	--	--	110	13,000	110
Naphthalene	--	1,600	NA	1,600	--	--	15,000	--	--	18,000	--	--	--	--	--	230	49,000	230

Table 7-11. Preliminary Remediation Goals for Soil – Recreational Scenarios. (3 Pages)

Analyte	90th Percentile Background [a]	Residential IAROD Cleanup Level (Direct Exposure) [b]	Radionuclide PRGs for 100 and 300 Areas (10^{-4} Target Risk) [c]	Nonradionuclide PRGs for 100 and 300 Areas (10-6 Target Risk or Hazard Quotient of 1) [d]	Casual User			Avid Angler			Avid Hunter							
					All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ = 1) [f]	All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ = 1) [f]	All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	Direct Contact PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	Direct Contact PRG (Cancer Risk; 10^{-6} Target Risk)	Food Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ = 1) [f]	Direct Contact PRG (Hazard; HQ = 1) [f]	Food Pathways PRG (Hazard; HQ = 1) [f]
Phenanthrene [j]	--	24,000	NA	--	--	--	22,000	--	--	28,000	--	--	--	--	--	570	74,000	570
Phenol	--	24,000	NA	24,000	--	--	240,000	--	--	310,000	--	--	--	--	--	4,000	780,000	4,000
Pyrene	--	2,400	NA	2,400	--	--	22,000	--	--	28,000	--	--	--	--	--	700	74,000	710

[a] DOE/RL-92-24, 2001, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Rev. 4, 2 vols., U.S. Department of Energy, Richland Operations Office, Richland, Washington.
DOE/RL-96-12, 1996, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
Ecology, 1994, *Natural Background Soil Metals Concentrations in Washington State*, Publication 94-115, Washington State Department of Ecology, Toxics Cleanup Program, Olympia, Washington.
[b] DOE/RL-96-17, 2009, *Remedial Design Report/Remedial Action Work Plan for the 100 Area*, Rev. 6, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
[c] ECF-HANFORD-10-0429, *Documentation of Preliminary Remediation Goals (PRGs) for Radionuclides Using the Unrestricted IAROD Exposure Scenario for the 100 and 300 Area Remedial Investigation/Feasibility Study (RI/FS) Report*, In Preparation, CH2M HILL Plateau Remediation Company, Richland, Washington.
[d] ECF-HANFORD-10-0444, *Documentation of Preliminary Remediation Goals (PRGs) for the IAROD Exposure Scenario Using Method B Soil Cleanup Levels for Unrestricted Land Use*, In Preparation, CH2M HILL Plateau Remediation Company, Richland, Washington.
[e] Radionuclide PRGs based on 1E-04 target risk for comparison to RESRAD-based Radionuclide PRGs (target risk of 1E-04) and IAROD values.
[f] Noncancer PRGs (hazard) based on child receptor exposure assumptions.
[g] Background value.
[h] Based on inhalation pathway.
[i] Hanford Site-specific background not available. Value is Washington State background from Washington State Department of Ecology Publication 94-115 (Ecology 1994).
[j] Toxicity data for this chemical are not available. Cleanup levels are based on surrogate chemicals.
Contaminant: acenaphthylene; surrogate: acenaphthene.
Contaminant: benzo(g,h,i)perylene; surrogate: pyrene.
Contaminant: dichloroprop; surrogate: dichlorophenoxyacetic acid; 2,4-; (2,4-D).
Contaminant: phenanthrene; surrogate: anthracene.
[k] Required detection limit.

-- = not applicable
EPA = U.S. Environmental Protection Agency
HQ = hazard quotient
IAROD = interim action record of decision
MTCA = *Model Toxics Control Act*
NA = not available
PRG = preliminary remediation goal
RESRAD = RESidual RADioactivity

Table 7-12. Preliminary Remediation Goals for Soil – Occupational Scenarios. (2 Pages)

Analyte	90th Percentile Background [a]	Residential IAROD Cleanup Level (Direct Exposure) [b]	Industrial IAROD Cleanup Level (Direct Exposure) [b]	Radionuclide PRGs for 100 and 300 Areas (10^{-4} Target Risk) [c]	Nonradionuclide PRGs for 100 and 300 Areas (10-6 Target Risk or Hazard Quotient of 1) [d]	Resident National Monument/Refuge Worker			Industrial/Commercial Worker		
						All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ=1) [f]	All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ=1) [f]
Radionuclides (pCi/g)											
Carbon-14	--	8.7	82	81	NA	55,000	550	--	110,000	1,100	--
Cesium-137	1.1	6.2	25	4.4	NA	3.3	0.033	--	9.1	0.091	--
Cobalt-60	0.0084	1.4	5.2	3.1	NA	1.8	0.018	--	4.8	0.048	--
Curium-244	--	--	--	551	NA	1,400	14	--	2,500	25	--
Europium-152	--	3.3	12	3.7	NA	2.1	0.021	--	5.9	0.059	--
Europium-154	0.033	3.1	11	4.4	NA	2.5	0.025	--	7.0	0.070	--
Nickel-63	--	--	>1,000,000	605	NA	99,000	990	--	200,000	2,000	--
Plutonium-239/240	0.025	35	250	203	NA	570	5.7	--	1,100	11	--
Strontium-90	0.18	4.5	2,500	2.3	NA	340	3.4	--	850	8.5	--
Technetium-99	--	5.8	410,000	15 [l]	NA	17,000	170	--	35,000	350	--
Uranium-233/234	1.1	1.1 [g]	170	140	NA	980	9.8	--	1,900	19	--
Uranium-235	0.11	0.61	16	16	NA	12	0.12	--	32	0.32	--
Uranium-238	1.1	1.1 [g]	170	54	NA	52	0.52	--	140	1.4	--
Inorganics (mg/kg)											
Aluminum	12,000	NA	NA	NA	80,000	--	--	910,000	--	--	>1,000,000
Antimony	5.0	32	1,400	NA	32	--	--	420	--	--	820
Arsenic	6.5	20 [g]	58	NA	0.67	--	1.7	270	--	3.5	570
Barium	130	5,600	4,900 [h]	NA	16,000	--	--	160,000	--	--	250,000
Beryllium	1.5	10 [h]	100 [h]	NA	160	--	1,700	1,900	--	1,600	3,500
Boron	--	7,200	700,000	NA	16,000	--	--	210,000	--	--	400,000
Cadmium	0.81 [j]	14 [h]	140 [h]	NA	40	--	2,200	870	--	2,100	1,800
Chromium	19	80,000	>1,000,000	NA	120,000	--	--	>1,000,000	--	--	>1,000,000
Copper	22	3,000	130,000	NA	3,200	--	--	42,000	--	--	82,000
Fluoride	2.8	4,800	210,000	NA	4,800	--	--	62,000	--	--	120,000
Hexavalent chromium	--	2.1 [g]	21 [h]	NA	240	--	330	3,100	--	310	5,900
Lead	10	350	1,000 [i]	NA	250	--	--	--	--	--	--
Mercury	0.33	24	1,100	NA	13	--	--	310	--	--	600
Nickel	19	1,600	70,000	NA	1,600	--	15,000	18,000	--	14,000	31,000
Nitrogen in nitrate	12	130,000	>1,000,000	NA	29,000	--	--	>1,000,000	--	--	>1,000,000
Nitrogen in nitrite	--	8,000	350,000	NA	24,000	--	--	100,000	--	--	200,000
Selenium	0.78 [j]	400	18,000	NA	400	--	--	5,200	--	--	10,000
Silver	0.73	400	18,000	NA	400	--	--	5,200	--	--	10,000
Strontium (elemental)	--	48,000	>1,000,000	NA	48,000	--	--	620,000	--	--	>1,000,000
Tin	--	48,000	>1,000,000	NA	48,000	--	--	620,000	--	--	>1,000,000
Uranium (inorganic)	3.2	240	510	NA	240	--	--	620	--	--	1,200
Zinc	68	24,000	>1,000,000	NA	24,000	--	--	310,000	--	--	610,000
Organics (mg/kg)											
2-Methylnaphthalene	--	320	14,000	NA	320	--	--	2,600	--	--	6,100
Acenaphthene	--	4,800	210,000	NA	4,800	--	--	38,000	--	--	91,000
Acenaphthylene [k]	--	4,800	210,000	NA	NA	--	--	38,000	--	--	91,000
Aldrin	--	0.059	7.7	NA	0.059	--	0.12	21	--	0.27	49
alpha-Chlordane	--	2.9	380	NA	2.9	--	7.0	440	--	15	920
Anthracene	--	24,000	>1,000,000	NA	24,000	--	--	190,000	--	--	460,000
Aroclor-1248	--	0.50	66	NA	0.50	--	0.87	12	--	2.1	30
Aroclor-1254	--	0.50	66	NA	0.50	--	0.87	12	--	2.1	30
Aroclor-1260	--	0.50	66	NA	0.50	--	0.87	12	--	2.1	30
Aroclor-1262	--	0.50	66	NA	0.50	--	0.87	12	--	2.1	30

Table 7-12. Preliminary Remediation Goals for Soil – Occupational Scenarios. (2 Pages)

Analyte	90th Percentile Background [a]	Residential IAROD Cleanup Level (Direct Exposure) [b]	Industrial IAROD Cleanup Level (Direct Exposure) [b]	Radionuclide PRGs for 100 and 300 Areas (10^{-4} Target Risk) [c]	Nonradionuclide PRGs for 100 and 300 Areas (10-6 Target Risk or Hazard Quotient of 1) [d]	Resident National Monument/Refuge Worker			Industrial/Commercial Worker		
						All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ=1) [f]	All Pathways PRG (Cancer Risk; 10^{-4} Target Risk) [e]	All Pathways PRG (Cancer Risk; 10^{-6} Target Risk)	All Pathways PRG (Hazard; HQ=1) [f]
Benzo[a]anthracene	--	1.4	180	NA	1.4	--	2.5	--	--	5.8	--
Benzo[a]pyrene	--	0.14	18	NA	0.14	--	0.25	--	--	0.58	--
Benzo[b]fluoranthene	--	1.4	180	NA	1.4	--	2.5	--	--	5.8	--
Benzo[ghi]perylene [k]	--	2,400	110,000	NA	--	--	--	19,000	--	--	46,000
Benzo[k]fluoranthene	--	1.4	180	NA	1.4	--	2.5	--	--	5.8	--
beta-1,2,3,4,5,6-Hexachlorocyclohexane	--	0.77	100	NA	0.56	--	1.4	260	--	2.9	550
Bis[2-ethylhexyl] phthalate	--	71	9,400	NA	71	--	140	14,000	--	320	32,000
Chrysene	--	14	1,800	NA	14	--	25	--	--	58	--
Dibenz[a,h]anthracene	--	1.4	180	NA	14	--	0.44	--	--	1.0	--
Dichlorodiphenyldichloroethylene	--	2.9	390	NA	2.9	--	7.5	--	--	16	--
Dichlorodiphenyltrichloroethane	--	2.9	390	NA	2.9	--	7.5	450	--	16	950
Dichloroprop [k]	--	640	35,000	NA	--	--	--	5,600	--	--	13,000
Dieldrin	--	0.063	8.2	NA	0.063	--	0.12	35	--	0.28	81
Endosulfan I	--	480	21,000	NA	480	--	--	4,200	--	--	9,700
Endosulfan II	--	480	21,000	NA	480	--	--	4,200	--	--	9,700
Endosulfan sulfate	--	480	21,000	NA	--	--	--	4,200	--	--	9,700
Endrin aldehyde	--	24	1,100	NA	--	--	--	210	--	--	490
Ethylene glycol	--	160,000	>1,000,000	NA	--	--	--	>1,000,000	--	--	>1,000,000
Fluoranthene	--	3,200	140,000	NA	3,200	--	--	26,000	--	--	61,000
Fluorene	--	3,200	140,000	NA	3,200	--	--	26,000	--	--	61,000
gamma-Chlordane	--	2.9	380	NA	--	--	7.0	440	--	15	920
Indeno[1,2,3-cd]pyrene	--	1.4	180	NA	1.4	--	2.5	--	--	5.8	--
Methoxychlor	--	400	18,000	NA	400	--	--	3,500	--	--	8,100
Naphthalene	--	1,600	70,000	NA	1,600	--	--	13,000	--	--	30,000
Phenanthrene [k]	--	24,000	>1,000,000	NA	--	--	--	19,000	--	--	46,000
Phenol	--	24,000	>1,000,000	NA	24,000	--	--	210,000	--	--	480,000
Pyrene	--	2,400	110,000	NA	2,400	--	--	19,000	--	--	46,000

[a] DOE/RL-92-24, 1995, Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes, Rev. 4, 2 vols., U.S. Department of Energy, Richland Operations Office, Richland, Washington.
DOE/RL-96-12, 1996, Hanford Site Background: Part 2, Soil Background for Radionuclides, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
Ecology, 1994, Natural Background Soil Metals Concentrations in Washington State, Publication 94 115, Washington State Department of Ecology, Toxics Cleanup Program, Olympia, Washington.
[b] DOE/RL-96-17, 2009, *Remedial Design Report/Remedial Action Work Plan for the 100 Area*, Rev. 6, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
DOE/RL-2001-47, 2009, *Remedial Design Report/Remedial Action Work Plan for the 300 Area*, Rev. 3, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
[c] ECF-HANFORD-10-0429, *Documentation of Preliminary Remediation Goals (PRGs) for Radionuclides Using the Unrestricted IAROD Exposure Scenario for the 100 and 300 Area Remedial Investigation/Feasibility Study (RI/FS) Report*, In Preparation, CH2M HILL Plateau Remediation Company, Richland, Washington.
[d] ECF-HANFORD-10-0444, *Documentation of Preliminary Remediation Goals (PRGs) for the IAROD Exposure Scenario Using Method B Soil Cleanup Levels for Unrestricted Land Use*, In Preparation, CH2M HILL Plateau Remediation Company, Richland, Washington.
[e] Radionuclide PRGs based on 1E-04 target risk for comparison to RESRAD-based radionuclide PRGs (target risk of 1E-04) and IAROD values.
[f] Noncancer PRGs (hazard) based on adult receptor exposure assumptions.
[g] Background value.
[h] Based on inhalation pathway.
[i] MTCA Method A value.
[j] Hanford Site-specific background not available. Value is Washington State background from Washington State Department of Ecology Publication 94-115 (Ecology 1994).
[k] Toxicity data for this chemical are not available. Cleanup levels are based on surrogate chemicals.
Contaminant: acenaphthylene; surrogate: acenaphthene
Contaminant: benzo(g,h,i)perylene; surrogate: pyrene
Contaminant: dichloroprop; surrogate: dichlorophenoxyacetic acid; 2,4-; (2,4-D)
Contaminant: phenanthrene; surrogate: anthracene
[l] Required detection limit.

-- = not applicable
EPA = U.S. Environmental Protection Agency
HQ = hazard quotient
IAROD = interim action record of decision
MTCA = *Model Toxics Control Act*
NA = not available
PRG = preliminary remediation goal
RESRAD = RESidual RADioactivity

Table 7-13. Preliminary Remediation Goals for Soil – Residential Scenarios. (3 Pages)

Analyte	90th Percentile Background [a]	Residential IAROD Cleanup Level (Direct Exposure) [b]	Radionuclide PRGs for 100 and 300 Areas (10^{-4} Target Risk) [c]	Nonradionuclide PRGs for 100 and 300 Areas (10-6 Target Risk or Hazard Quotient of 1) [d]	EPA PRG for Residential Soil (10^{-4} Target Risk) [e]	EPA PRG for Residential Soil (10^{-6} Target Risk or Hazard Quotient of 1) [e]
Radionuclides (pCi/g)						
Carbon-14	--	8.7	81	NA	46	0.46
Cesium-137	1.1	6.2	4.4	NA	390	3.9
Cobalt-60	0.0084	1.4	3.1	NA	3.6	0.036
Curium-244	--	--	551	NA	670	6.7
Europium-152	--	3.3	3.7	NA	4.2	0.042
Europium-154	0.033	3.1	4.4	NA	5.0	0.050
Nickel-63	--	--	605	NA	9500	95
Plutonium-239/240	0.025	35	203	NA	260	2.6
Strontium-90	0.18	4.5	2.3	NA	33	0.33
Technetium-99	--	5.8	15[j]	NA	25	0.25
Uranium-233/234	1.1	1.1 [f]	140	NA	390	3.9
Uranium-235	0.11	0.61	16	NA	21	0.21
Uranium-238	1.1	1.1 [f]	54	NA	450	4.5
Inorganics (mg/kg)						
Aluminum	12,000	NA	NA	80,000	NA	77,000
Antimony	5.0	32	NA	32	NA	31
Arsenic	6.5	20 [f]	NA	0.67	NA	0.39
Barium	130	5,600	NA	16,000	NA	15,000
Beryllium	1.5	10 [g]	NA	160	NA	160
Boron	--	7,200	NA	16,000	NA	16,000
Cadmium	0.81 [h]	14 [g]	NA	40	NA	70
Chromium	19	80,000	NA	120,000	NA	--
Copper	22	3,000	NA	3,200	NA	3,100
Fluoride	2.8	4,800	NA	4,800	NA	4,700
Hexavalent chromium	--	2.1 [f]	NA	240	NA	0.29
Lead	10	350	NA	250	NA	400
Mercury	0.33	24	NA	13	NA	5.6
Nickel	19	1,600	NA	1,600	NA	1,500
Nitrogen in nitrate	12	130,000	NA	29,000	NA	--
Nitrogen in nitrite	--	8,000	NA	2,400	NA	--
Selenium	0.78 [h]	400	NA	400	NA	390
Silver	0.73	400	NA	400	NA	390
Strontium (elemental)	--	48,000	NA	48,000	NA	47,000
Tin	--	48,000	NA	48,000	NA	47,000
Uranium (inorganic)	3.2	240	NA	240	NA	--

Table 7-13. Preliminary Remediation Goals for Soil – Residential Scenarios. (3 Pages)

Analyte	90th Percentile Background [a]	Residential IAROD Cleanup Level (Direct Exposure) [b]	Radionuclide PRGs for 100 and 300 Areas (10^{-4} Target Risk) [c]	Nonradionuclide PRGs for 100 and 300 Areas (10-6 Target Risk or Hazard Quotient of 1) [d]	EPA PRG for Residential Soil (10^{-4} Target Risk) [e]	EPA PRG for Residential Soil (10^{-6} Target Risk or Hazard Quotient of 1) [e]
Zinc	68	24,000	NA	24,000	NA	23,000
Organics (mg/kg)						
2-Methylnaphthalene	--	320	NA	320	NA	310
Acenaphthene	--	4,800	NA	4,800	NA	3,400
Acenaphthylene [i]	--	4,800	NA	--	NA	--
Aldrin	--	0.059	NA	0.059	NA	0.029
alpha-Chlordane	--	2.9	NA	2.9	NA	--
Anthracene	--	24,000	NA	24,000	NA	17,000
Aroclor-1248	--	0.50	NA	0.50	NA	0.22
Aroclor-1254	--	0.50	NA	0.50	NA	0.22
Aroclor-1260	--	0.50	NA	0.50	NA	0.22
Aroclor-1262	--	0.50	NA	0.50	NA	--
Benzo[a]anthracene	--	1.4	NA	1.4	NA	0.15
Benzo[a]pyrene	--	0.14	NA	0.14	NA	0.015
Benzo[b]fluoranthene	--	1.4	NA	1.4	NA	0.15
Benzo[ghi]perylene [i]	--	2,400	NA	--	NA	--
Benzo[k]fluoranthene	--	1.4	NA	1.4	NA	1.5
beta-1,2,3,4,5,6-Hexachlorocyclohexane	--	0.77	NA	0.56	NA	0.27
Bis[2-ethylhexyl] phthalate	--	71	NA	71	NA	35
Chrysene	--	14	NA	14	NA	15
Dibenz[a,h]anthracene	--	1.4	NA	1.4	NA	0.015
Dichlorodiphenyldichloro-ethylene	--	2.9	NA	2.9	NA	1.4
Dichlorodiphenyltrichloro-ethane	--	2.9	NA	2.9	NA	1.7
Dichloroprop [i]	--	640	NA	--	NA	--
Dieldrin	--	0.063	NA	0.063	NA	0.030
Endosulfan I	--	480	NA	480	NA	370
Endosulfan II	--	480	NA	480	NA	370
Endosulfan sulfate	--	480	NA	--	NA	--
Endrin aldehyde	--	24	NA	--	NA	--
Ethylene glycol	--	160,000	NA	--	NA	120,000
Fluoranthene	--	3,200	NA	3,200	NA	2,300
Fluorene	--	3,200	NA	3,200	NA	2,300
gamma-Chlordane	--	2.9	NA	--	NA	--
Indeno[1,2,3-cd]pyrene	--	1.4	NA	1.4	NA	0.15
Methoxychlor	--	400	NA	400	NA	310

Table 7-13. Preliminary Remediation Goals for Soil – Residential Scenarios. (3 Pages)

Analyte	90th Percentile Background [a]	Residential IAROD Cleanup Level (Direct Exposure) [b]	Radionuclide PRGs for 100 and 300 Areas (10^{-4} Target Risk) [c]	Nonradionuclide PRGs for 100 and 300 Areas (10-6 Target Risk or Hazard Quotient of 1) [d]	EPA PRG for Residential Soil (10^{-4} Target Risk) [e]	EPA PRG for Residential Soil (10^{-6} Target Risk or Hazard Quotient of 1) [e]
Naphthalene	--	1,600	NA	1,600	NA	3.6
Phenanthrene [i]	--	24,000	NA	--	NA	--
Phenol	--	24,000	NA	24,000	NA	18,000
Pyrene	--	2,400	NA	2,400	NA	1,700

[a] DOE/RL-92-24, 2001, *Hanford Site Background: Part 1, Soil Background for Nonradioactive Analytes*, Rev. 4, 2 vols., U.S. Department of Energy, Richland Operations Office, Richland, Washington.
DOE/RL-96-12, 1996, *Hanford Site Background: Part 2, Soil Background for Radionuclides*, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
Ecology, 1994, *Natural Background Soil Metals Concentrations in Washington State*, Publication 94 115, Washington State Department of Ecology, Toxics Cleanup Program, Olympia, Washington.
[b] DOE/RL-96-17, 2009, *Remedial Design Report/Remedial Action Work Plan for the 100 Area*, Rev. 6, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
[c] ECF-HANFORD-10-0429, *Documentation of Preliminary Remediation Goals (PRGs) for Radionuclides Using the Unrestricted IAROD Exposure Scenario for the 100 and 300 Area Remedial Investigation/Feasibility Study (RI/FS) Report*, In Preparation, CH2M HILL Plateau Remediation Company, Richland, Washington.
[d] ECF-HANFORD-10-0444, *Documentation of Preliminary Remediation Goals (PRGs) for the IAROD Exposure Scenario Using Method B Soil Cleanup Levels for Unrestricted Land Use,* In Preparation, CH2M HILL Plateau Remediation Company, Richland, Washington.
[e] EPA PRGs for Radionuclides, 2007 (http://www.epa.gov/superfund/health/contaminants/radiation/radrisk.htm);
EPA Regional Screening Level Table, December 2009 (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm).
[f] Background value.
[g] Based on inhalation pathway.
[h] Hanford Site-specific background not available. Value is Washington State background from Washington State Department of Ecology Publication 94-115.
[i] Toxicity data for this chemical are not available. Cleanup levels are based on surrogate chemicals.
Contaminant: acenaphthylene; surrogate: acenaphthene.
Contaminant: benzo(g,h,i)perylene; surrogate: pyrene.
Contaminant: dichloroprop; surrogate: dichlorophenoxyacetic acid; 2,4-; (2,4-D).
Contaminant: phenanthrene; surrogate: anthracene.
[j] Required detection limit.

-- = not applicable
EPA = U.S. Environmental Protection Agency
IAROD = interim action record of decision
MTCA = *Model Toxics Control Act*
NA = not available
PRG = preliminary remediation goal
RESRAD = RESidual RADioactivity

Table 7-14. Comparison of Exposure Pathways – Interim Action Record of Decision Cleanup Levels vs. U.S. Environmental Protection Agency Regional Screening Levels.

Basis	Scenario	Exposure Route		Percent Contribution to Risk/Hazard Quotient by Exposure Route				
		Route	Key Input Parameters	Arsenic	Mercury	Chromium (III)	Aroclor-1260	Benzo(a)pyrene
Residential IAROD Cleanup Levels [a]	Unrestricted use	Ingestion	Soil intake rate	100%	100%	100%	100%	100%
		Total		100%	100%	100%	100%	100%
EPA Regional Screening Levels [b]	Residential	Ingestion	Soil intake rate	91%	100%	100%	69%	73%
		Dermal contact	Skin surface area, adherence factor, absorption factor (chemical-specific)	9%	0%	0%	31%	28%
		Inhalation	Particulate emission factor, volatilization factor (chemical-specific), exposure time	0%	0%	0%	0%	0%
		Total		100%	100%	100%	100%	100%

[a] DOE/RL-96-17, 2009, *Remedial Design Report/Remedial Action Work Plan for the 100 Area*, Rev. 6, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
[b] EPA Regional Screening Level Table, December 2009 (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm).

EPA = U.S. Environmental Protection Agency
IAROD = interim action record of decision