Appendix J

Alternative Development Supporting Documentation

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Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
100-K-1	100-K-1, 119-KW French Drain, 119-KW Exhaust Air Sample Building French Drain, 100-K-45 The site is a 0.46 m (1.5 ft) diameter concrete French drain that extends approximately 15 cm (6 in.) above the surrounding grade. It had a blue metal cover that is posted with "Confined Space" and "Surface Contamination" warning signs. During a site visit in April 2000, the area was found to be covered with cobble and surrounded with posts and chain. A sign reading "116-KW-1 Storage Basin French Drain" is still marking the area.	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	9 m^2 (100 ft^2)	1.5 m (5 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) Removal, Treatment, and Disposal (RTD) area of 9 m^2 (100 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) Removal, Treatment, and Disposal (RTD) area of 9 m^2 (100 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-100	100-K-100, Radioactive Material Area Remaining after 107-KW Basin Removal, 116-KW-3 Remaining Contaminated Soil and Items	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	4,366 m^2 (47,000 ft^2)	3.7 m (12 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 4,366 m^2 (47,000 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 4,366 m^2 (47,000 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-101	100-K-101, French Drains and Mercury Stained Soils near the 183KE Sedimentation Basin	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI) and/or other COPCs	4,622 m^2 (49,750 ft^2)	6.1 m (20 ft)	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Antimony, Total Chromium, Hexavalent Chromium	1) Minimal Design Sampling 2) RTD area of 4,622 m^2 (49,750 ft^2) to 6.1 m (20 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 4,622 m^2 (49,750 ft^2) to 6.1 m (20 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-102	100-K-102, French Drains and Mercury Stained Soils near the 183KW Sedimentation Basin	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-103	100-K-103, 1704-K and 1717-K Septic Systems	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	347 m^2 (3,740 ft^2)	4.6 m (15 ft)	Radionuclides and Metals, Nitrate, Nitrite	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3,740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3,740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty

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100-K-104	100-K-104, 166-KE French Drain	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	1 m^2 (8 ft^2)	4.6 m (15 ft)	Metals and PCBs	1) Minimal Design Sampling 2) RTD area of 1 m^2 (8 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 1 m^2 (8 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-105	100-K-105, Pit at Southeast Corner of 100K	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	3 m^2 (36 ft^2)	4.6 m (15 ft)	Metals	1) Minimal Design Sampling 2) RTD area of 3 m^2 (36 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 3 m^2 (36 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-106	100-K-106, 182-K Fuel Oil Crib	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	37 m^2 (400 ft^2)	4.6 m (15 ft)	Metals, PCBs, and TPH	1) Minimal Design Sampling 2) RTD area of 37 m^2 (400 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 37 m^2 (400 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-107	100-K-107, 1706-KER Abandoned Drain Field. A fenced area 31 m (102 ft) northwest of the northwest corner of the 1706-KER building is assumed to be this abandoned drain field.	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	1 m^2 (16 ft^2)	4.6 m (15 ft)	Radionuclides and Metals, Nitrate, Nitrite	1) Minimal Design Sampling 2) RTD area of 1 m^2 (16 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 1 m^2 (16 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-108	100-K-108, 1706-KER Septic System	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	347 m^2 (3,740 ft^2)	4.6 m (15 ft)	Radionuclides and Metals, Nitrate, Nitrite	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3,740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3,740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-109	100-K-109, Unplanned Chemical Release near 183.1KW Head House, Yellow Stained Soil adjacent to 183.1KW Head House The waste site is an area of yellow stained soil, from an unplanned release that is adjacent to the railroad track, south/southwest of the demolished 183.1KW headhouse.	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).

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General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
100-K-110	The site consists of the soil beneath the removed structures of the 183.2-KW Sedimentation Basins and 183.3 KW Sand Filter Basins. The site was added to WIDS as a result of sampling the soil under the 183.2-KW Flocculation and Sedimentation Basins, the 183.3-KW Sand Filter Basin, and the 183.7-KW Pipe Tunnel structures after the decommissioning and demolition activities. The sampling was conducted according to the Remedial Design Report/ Remedial Action work Plan for the 100 Area (RDR/RAWP) (DOE/RL-96-17, Rev. 6), 100 Area Remedial Sampling and Analysis Plan (SAP) (DOE/RL-96-22, Rev 5), and the Sampling Instruction for the 183.2-KW Flocculation and Sedimentation Basins, 183.3-KW Sand Filter Basin, and 183.7-KW Pipe Tunnel Areas, DD-48021 (SI) in October 2010.	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-13	100-K-13, French Drain West of the 166-KW Oil Storage Tank Facility. Prior to the construction of the Cold Vacuum storage Facility, the drain had been almost flush with the ground surface. Facility construction required the area to be graded. The construction project has scraped the ground down about 1.8 m (6 ft), leaving the French drain about 2.3 m (7.5 ft) above ground level. The French drain is now covered by a corrugated metal caisson to protect the French drain structure. Prior to current construction activities, the drain extended above grade about 0.46 m (1.5 ft) and was surrounded by a yellow wooden barricade. The French drain has no markings of any kind. No other documentation or drawings could be found that identify the site or its purpose. Prior to current construction, no facilities were close to the site.	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	5 m^2 (49 ft^2)	1.8 m (6 ft)	Metals and PCBs	1) Minimal Design Sampling 2) RTD area of 5 m^2 (49 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 5 m^2 (49 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty

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100-K-14	100-K-14, 183-KE Acid Neutralization Pit and Overflow French Drain; 1.5 m (5 ft) dia.	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	6 m^2 (63 ft^2)	4.6 m (15 ft)	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Antimony, Total Chromium	1) Minimal Design Sampling 2) RTD area of6 m^2 (63 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of6 m^2 (63 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-18	100-K-18, 183-KW Caustic Neutralization Pit The pit was constructed in such a way that small volumes of waste chemicals could be held up in a brick lined compartment for neutralization. After neutralization, waste was flushed to a larger compartment within the structure, which then drained to the process sewer.	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-19	100-K-19, 183-KW Caustic Soda Storage Tank Site	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-25	100-K-25, 183-KE Caustic Neutralization Pit	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	See 120-KE-1	See 120-KE-1	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Antimony, Total Chromium	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
100-K-27	100-K-27, 183-KE Caustic Soda Storage Tank Site	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	See 120-KE-1	See 120-KE-1	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Antimony, Total Chromium	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
100-K-3	100-K-3, 1706-KE Fish Pond Heat Exchanger Pit and Pump Pit, Water Studies Semi-Works	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-30	100-K-30, 183-KE Sulfuric Acid Tank Bases (West Tank). The 183-KE Sulfuric Acid Storage Tank was associated with 183-KE Water	Site exceeds Ecological risk criteria for Mercury	Ecological Risk	See 120-KE-1	See 120-KE-1	Mercury	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.

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	Treatment Plant. West of this tank were two smaller sulfuric acid tanks (120-KE-4 and 120-KE-5) that was used for the same purpose. East of the tank was another tank the same size that was used for the same purpose.	(see Chapter 7)						
100-K-31	100-K-31, 183-KE Sulfuric Acid Tank Bases (East Tank) The site has been remediated and interim closed out.	Site exceeds Ecological risk criteria for Mercury (see Chapter 7)	Ecological Risk	See 120-KE-1	See 120-KE-1	Mercury	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
100-K-33	100-K-33, 183-KW Sulfuric Acid Tank Bases (West Tank) The site has been remediated and interim closed out.	Site exceeds Ecological risk criteria for Mercury (see Chapter 7)	Ecological Risk	See 120-KE-1	See 120-KE-1	Mercury	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
100-K-34	100-K-34, 183-KW Acid Neutralization Pit	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-35	100-K-35, 183-KE Acid Neutralization Pit	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	See 120-KE-1	See 120-KE-1	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Antimony, Total Chromium	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
100-K-36	100-K-36, 1706-KE Chemical Storage Facility Dry Well	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-4	100-K-4, 1706-KE Wet Fish Studies Ponds and Valve Pit	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).

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100-K-42	100-K-42, 100 Area KE Basin, 105 KE Fuel Storage Basin, K East Basin, Irradiated Fissile Material Storage, Metal Storage Basin, 100 K-40	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-43	100-K-43, KW Basin, 105-KW Fuel Storage Basin, K West Basin, Irradiated Fissile Material Storage	Post-ROD To-Go Site	Building/Structure	1,784 m^2 (19,200 ft^2)	13.7 m (45 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 1,784 m^2 (19,200 ft^2) to 13.7 m (45 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 1,784 m^2 (19,200 ft^2) to 13.7 m (45 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-46	100-K-46, 119-KE French Drain, Drywell	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-47	100-K-47, 1904-K Process Sewer	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	51,750 ft^2	25 ft	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 4807 m^2 (51,750 ft^2) to 9.1 m (30 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 4807 m^2 (51,750 ft^2) to 9.1 m (30 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-48	100-K-48, 100-KE Oil Contamination Areas	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	84 m^2 (900 ft^2)	0.3 m (1 ft)	Metals, TPH and PCBs	1) Landfarming 2) Supplemental ICs	1) Minimal Design Sampling 2) RTD area of 84 m^2 (900 ft^2) to 1 m (3 ft) 3) Disposal at ERDF or other approved disposal facililty
100-K-49	100-K-49, 100-KW Oil Contamination Area	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	37 m^2 (400 ft^2)	0.3 m (1 ft)	Metals, TPH and PCBs	1) Landfarming 2) Supplemental ICs	1) Minimal Design Sampling 2) RTD area of 37 m^2 (400 ft^2) to 1 m (3 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-5	100-K-5, 1705-KE French Drain	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	2 m^2 (25 ft^2)	4.6 m (15 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 2 m^2 (25 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 2 m^2 (25 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty

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100-K-50	100-K-50, 1725-K & 1726-K Sanitary Sewer System Holding Tank	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	16 m^2 (175 ft^2)	4.6 m (15 ft)	Metals, Nitrate and Nitrite	1) Minimal Design Sampling 2) RTD area of 16 m^2 (175 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 16 m^2 (175 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-53	100-K-53, 100-KE Glycol Heat Recovery Underground Pipelines	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-54	100-K-54, 100-KW Glycol Heat Recovery Underground Pipelines	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	414 m^2 (4,459 ft^2)	2.4 m (8 ft)	Metals and Ethylene Glycol	1) Minimal Design Sampling 2) RTD area of 414 m^2 (4,459 ft^2) to 2.4 m (8 ft) bgs (pipeline removal). 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 414 m^2 (4,459 ft^2) to 2.4 m (8 ft) bgs (pipeline removal). 3) Disposal at ERDF or other approved disposal facililty
100-K-55:2	100-K-55, 100-KW Reactor Cooling Water Effluent Underground Pipelines (see Subsites)	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI)	267 m^2 (2,870 ft^2)	5.2 m (17 ft)	Radionuclides and Metals, Cr(VI)	1) Minimal Design Sampling 2) RTD area of 267 m^2 (2,870 ft^2) to 5.2 m (17 ft) bgs (pipeline removal). 3) Disposal at ERDF or other approved disposal facililty * Cultural Resource Review	1) Minimal Design Sampling 2) RTD area of 267 m^2 (2,870 ft^2) to 5.2 m (17 ft) bgs (pipeline removal). 3) Disposal at ERDF or other approved disposal facililty * Cultural Resource Review
100-K-56:2	100-K-56, 100-KE Reactor Cooling Water Effluent Underground Pipelines (see Subsites)	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI)	267 m^2 (2,870 ft^2)	4.6 m (15 ft)	Radionuclides and Metals, ethylene glycol, Cr(VI)	1) Minimal Design Sampling 2) RTD area of 267 m^2 (2,870 ft^2) to 4.6 m (15 ft) bgs (pipeline removal). 3) Disposal at ERDF or other approved disposal facililty * Cultural Resource Review	1) Minimal Design Sampling 2) RTD area of 267 m^2 (2,870 ft^2) to 4.6 m (15 ft) bgs (pipeline removal). 3) Disposal at ERDF or other approved disposal facililty * Cultural Resource Review
100-K-57	100-K-57, 107-KE Drainage Ditch	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI)	2462 m^2 (26,500 ft^2)	1.5 m (5 ft)	Radionuclides and Metals, Cr(VI)	1) Minimal Design Sampling 2) RTD area of 2462 m^2 (26,500 ft^2) to 4.6 m (15 ft) bgs (pipeline removal). 3) Disposal at ERDF or other approved disposal facililty * Cultural Resource Review	1) Minimal Design Sampling 2) RTD area of 2,462 m^2 (26,500 ft^2) to 4.6 m (15 ft) bgs (pipeline removal). 3) Disposal at ERDF or other approved disposal facililty * Cultural Resource Review
100-K-6	100-K-6, Vacuum Pit, Cyclone	Pre-ROD To-Go	None	0	0	None	Not Evaluated. Site assumed to pass	Not Evaluated. Site assumed to pass

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General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
	Separator, 105-KE Vacuum Pit	Site					PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-60	100-K-60, 1904-K Process Sewer (165-KW)	Post-ROD To-Go Site	Building/Structure	650 m^2 (7,000 ft^2)	6.7 m (22 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 650 m^2 (7,000 ft^2) to 6.7 m (22 ft) bgs (pipeline removal). 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 650 m^2 (7,000 ft^2) to 6.7 m (22 ft) bgs (pipeline removal). 3) Disposal at ERDF or other approved disposal facililty
100-K-61	100-K-61, 117-KW Filter Building	Post-ROD To-Go Site	Building/Structure	300 m^2 (3,225 ft^2)	12.2 m (40 ft)	Radionuclides and Metals	RTD (Building demolition)	RTD (Building demolition)
100-K-62	100-K-62, 117-KE Filter Building	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-63	100-K-63, 100-KW Floodplain, 100-K Flood Plain Contamination Area	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9). * Cultural Resource Review	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9). * Cultural Resource Review
100-K-64	100-K-64, 100-KE Floodplain, 100-KE Flood Plain Contamination Area	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	83613 m^2 (900,000 ft^2)	4.6 m (15 ft)	Radionuclides (e.g., Cs-137) and Metals	1) Minimal Design Sampling 2) RTD area of 83613 m^2 (900,000 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty * Cultural Resource Review	1) Minimal Design Sampling 2) RTD area of 83,613 m^2 (900,000 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty * Cultural Resource Review
100-K-66	100-K-66, 165-KW Power Control Building The building is posted Danger-Restricted Area- Asbestos.	Post-ROD To-Go Site	Building/Structure	2453 m^2 (26,400 ft^2)	4.6 m (15 ft)	Radionculides, Metals, PCBs and Asbestos	RTD (Building demolition)	RTD (Building demolition)
100-K-67	100-K-67, 165-KE Power Control	Post-ROD	Building/Structure	2453 m^2	4.6 m (15 ft)	Radionculides, Metals,	RTD (Building demolition)	RTD (Building demolition)

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
	Building	To-Go Site		(26,400 ft^2)		PCBs and Asbestos		
100-K-68	100-K-68, 105-KE Pump Gallery and Catch Tank, D Sump	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-69	100-K-69, 105-KE Sump C	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-70	100-K-70, 105-KE Waste Storage Tank, Holding Tank	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-71	100-K-71, 105-KE Collection Box	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-72	100-K-72, 105-KW Pump Gallery and Catch Tank, D Sump	Post-ROD To-Go Site	Building/Structure	23 m^2 (250 ft^2)	6.1 m (20 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 23 m^2 (250 ft^2) to 6.1 m (20 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 23 m^2 (250 ft^2) to 6.1 m (20 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
100-K-73	100-K-73, 105-KW Collection Box	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI) and/or other COPCs	11 m^2 (120 ft^2)	13.7 m (45 ft)	Radionuclides and Metals, Cr(VI)	1) Minimal Design Sampling 2) RTD area of 11 m^2 (120 ft^2) to 20 m (65 ft) bgs. 3) Disposal at ERDF or other approved disposal facililtyDisposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 11 m^2 (120 ft^2) to 20 m (65 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-74	100-K-74, 105-KW Waste Storage Tank, Holding Tank	Post-ROD To-Go Site	Building/Structure	28 m2 (300 ft2)	1.5 m (5 ft)	Radionuclides (e.g. Sr-90) and Metals	1) Minimal Design Sampling 2) RTD area of 28 m^2 (300 ft^2) to 1.5 m (5 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 28 m^2 (300 ft^2) to 1.5 m (5 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-75	100-K-75, 105-KW Sump C	Post-ROD To-Go Site	Building/Structure	23 m2 (250 ft2)	6.1 m (20 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 23 m^2 (250 ft^2) to 6.1 m (20 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 23 m^2 (250 ft^2) to 6.1 m (20 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-77	100-K-77, Underground Railroad Ties Southeast of 1706KE	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-79	100-K-79; Sodium Dichromate and Sulfuric Acid Product Pipelines at 100-K	Post-ROD To-Go Site	Building/Structure	53 m2 (570 ft2)	4.6 m (15 ft)	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Antimony, Cr(VI), Total Chromium	1) Minimal Design Sampling 2) RTD area of 53 m2 (570 ft2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 53 m2 (570 ft2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-80	100-K-80, 100K River Effluent Pipeline, 100K River Line, 116-K-3 Outfall Structure, 1908 K Outfall	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	93 m2 (1,000 ft2)	2.4 m (8 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 93 m2 (1,000 ft2) to 2.4 m (8 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty * Cultural Resource Review	1) Minimal Design Sampling 2) RTD area of 93 m2 (1,000 ft2) to 2.4 m (8 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty * Cultural Resource Review

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
100-K-81	100-K-81, Contamination Area West of 116-K-3. The large cylindrical piece of equipment could be lowered into the top of the outfall structure. It was used to plug the outfall structure and prevent water from going through the structure.	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	7 m2 (75 ft2)	1.5 m (5 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 7 m2 (75 ft2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 7 m2 (75 ft2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-82	100-K-82, 105 -KW Fuel Storage Basin Leak	Post-ROD To-Go Site	Site near Reactor Groundwater/surface water protection risk likely for other COPCs	884 m2 (9,520 ft2)	6.7 m (22 ft)	Radionuclides (e.g. Sr-90) and Metals	1) Surface Barrier After 75 years: 2) Remove Surface Barrier 3) Minimal Design Sampling 4) RTD area of 884 m2 (9,520 ft2) to 20 m (65 ft) bgs. 5) Disposal at ERDF or other approved disposal facililty	1) Surface Barrier After 75 years: 2) Remove Surface Barrier 3) Minimal Design Sampling 4) RTD area of 884 m2 (9,520 ft2) to 20 m (65 ft) bgs. 5) Disposal at ERDF or other approved disposal facililty
100-K-83	100-K-83, 1904- K Spillway, 116 K-3, 1904-K Outfall Structure	Post-ROD To-Go Site	Building/Structure	655 m2 (7,050 ft2)	4.6 m (15 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 655 m2 (7,050 ft2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 655 m2 (7,050 ft2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-84	Material is suspect magnetite and garnet sand. Sampling indicated elevated metals concentrations.	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-86	This site is four areas with stained soil, surface debris, and the underlying soil. The COPCs are unknown. There was no information describing the release of these materials.	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
100-K-87	The site consists of a 0.6 m (2 ft) segment of suspected friable asbestos pipe lagging and any contaminated soil related to the asbestos.	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-88	This site consists of stained soil, scattered yellow granular material, and the underlying soil. There is no vegetation within the release area. The exact nature of the material is unknown.	Pre-ROD To-Go Site	None	0	0	None documented	Not evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-89	This site consists of burned debris (wood, metal, and roofing material) and the underlying soil.	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-90	This site consists of white granular material and the underlying soil. The vegetation at the site appears to be unaffected by the presence of the substance.	Pre-ROD To-Go Site	None	0	0	None documented	Not evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-91	This site consists of one intact vehicle battery, partially buried, and the underlying soil. The surrounding vegetation appears to be unaffected by its presence.	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
100-K-92	This site is two areas of reddish-crusted soil and the underlying soil. Area 1—The site is reddish-crusted soil indicating that a liquid may have been dumped to the ground. There is little or no vegetation growing in the stained area. Area 2—The site is reddish-stained soil, metal debris, and the remnants of a crushed drum. There is little or no vegetation growing in the affected area.	Pre-ROD To-Go Site	None	0	0	None	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not Evaluated. Site assumed to pass PRGs. If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-93	The site consists of a degraded 208 L (55 gal) drum with a solidified tar-like substance, and any contaminated soil.	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-94	100-K-94, 1702-KE and 1702-KW Guard House Dry Wells Each 76 cm (30 in.) dry well received drinking water through a 7.6 cm (3 in.) cast iron pipe that exited guardhouses.	Post-ROD To-Go Site	Building/Structure	2 m^2 (25 ft^2)	4.6 m (15 ft)	Metals	1) Minimal Design Sampling 2) RTD area of 2 m^2 (25 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 2 m^2 (25 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
100-K-95	This location is a large area with tar dumps scattered throughout and underlying soil.	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-97	100-K-97, 183-KW French Drain and Rail Spur Unplanned Release	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
100-K-98	100-K-98, 183-KE French Drain and Rail Spur Unplanned Release	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI)	See 120-KE-1	See 120-KE-1	Metals, Cr(VI), and PCBs	Encompassed by alternative for 120-KE-1	Encompassed by alternative for 120-KE-1

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
100-K-99	100-K-99, Radioactive Material Area Remaining After 107-KE Basin Removal, 116-KE-4 Contaminated Soil and Items	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	4,422 m^2 (47,600 ft^2)	3.7 m (12 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 4,422 m^2 (47,600 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 4,422 m^2 (47,600 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
116-K-3	116-K-3, 1904-K Outfall Structure, 1908-K Outfall Structure. The unit received reactor coolant water from the 107-K Retention Basins. The radionuclide content is unknown. The structure also received general area wastes through the concrete box sewer. The concrete box sewer wastes went into the single chamber of the structure and then drained into the two pipelines into the river.	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI)	37 m^2 (400 ft^2)	1.5 m (5 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 37 m^2 (400 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty 4) Soil Flushing w/Water (outfall) 5) GW Monitoring 6) Supplemental Ics * Cultural Resource Review	1) Minimal Design Sampling 2) RTD area of 37 m^2 (400 f^2) to 17 m (55 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty * Cultural Resource Review
116-KE-1	116-KE-1, 115-KE Condensate Crib	Post-ROD To-Go Site	Site near reactor; Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs); and groundwater/surface water protection risk for other COPCs (Carbon-14 and Tritium)	418 m^2 (4,500 ft^2)	15.2 m (50 ft)	Carbon-14, Cs-137, Co-60, Eu-154, Sr-90, Tritium (per BHI-01737)	1) Surface barrier (area of 418 m^2 [4,500 ft^2]) After 75 years: 2) Confirmation/verification sampling 3) RTD area of 418 m^2 (4,500 ft^2) to 15.2 m (50 ft). Disposal at ERDF or other approved disposal facililty 4) Soil Flushing with Water 5) Air Stripping for the treatment of C-14 while the soil flushing system is operating.	1) Surface barrier After 75 years: 2) Minimal Design Sampling 3) RTD area of 418 m^2 (4,500 ft^2) to 20 m (65 ft) bgs. 4) Disposal at ERDF or other approved disposal facililty 5) Air Stripping
116-KE-2	116-KE-2, 1706-KER Waste Crib Drilling in the mid-1970's next to the crib revealed concentrations of radionuclides in the soil. The total estimated concentration was 38 curies. The radionuclide inventory decayed through April 1, 1986, was estimated at approximately 14.6 curies, and is composed predominantly of cobalt-60 and strontium-90. Approximately 100,000 kg (220,500 lbs) of sodium hydroxide may have been disposed of into the crib as well as 100,000 kg (220,500 lbs) of sulfuric acid.	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI) and/or other COPCs	21 m2 (225 ft^2)	7.6 m (25 ft)	Radionuclides (e.g. Sr-90 and Co-60) and Metals	1) Cinfirmation/Verification Sampling 2) RTD area of 21 m^2 (225 ft^2) to 20 m (65 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Cinfirmation/Verification Sampling 2) RTD area of 21 m^2 (225 ft^2) to 20 m (65 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
116-KE-3	116-KE-3, 105-KE Storage Basin French Drain, 105-KE Fuel Storage Basin Sub-Basin Drainage Disposal System Crib	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
116-KW-1	116-KW-1, 115-KW Condensate Crib The crib and pipeline have been removed and the site backfilled with clean soil to the average adjacent grade elevation. Before the 2004 remediation, the bottom of the crib was 1.8 m (6 ft) in diameter and was 7.8 m (25.5 ft) below the ground surface. The top of the crib measures 12.2 m (40 ft) in diameter. The bottom of the crib was filled with 3 m (10 ft) of course gravel, then backfilled with dirt to grade. This site included the feed pipeline from the 115-KW Building.	Post-ROD To-Go Site	Site near reactor; Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs); and groundwater/surface water protection risk for other COPCs (Carbon-14 and Tritium)	418 m^2 (4,500 ft2)	15.2 m (50 ft)	Carbon-14, Cs-137, Co-60, Eu-154, Sr-90, Tritium (per BHI-01737)	1) Surface barrier (area of 418 m^2 [4,500 ft^2]) After 75 years: 2) Confirmation/verification sampling 3) RTD area of 418 m^2 (4,500 ft^2) to 17 m (55 ft) bgs. Disposal at ERDF or other approved disposal facililty 4) Soil Flushing with Water 5) Groundwater Monitoring 6) Air Stripping for the treatment of C-14 while the soil flushing system is operating.	1) Surface barrier (area of 418 m^2 [4,500 ft^2]) After 75 years: 2) Minimal Design Sampling 3) RTD area of 418 m^2 (4,500 ft^2) to 20 m (65 ft) bgs. 4) Disposal at ERDF or other approved disposal facililty 5) Air Stripping

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
116-KW-2	116-KW-2, 105-KW Storage Basin French Drain, 105-KW Basin Reverse Well, 105-KW Fuel Storage Basin Sub-Basin Drainage Disposal System Crib	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI) and/or other COPCs	35 m^2 (375 ft^2)	10.7 m (35 ft)	Radionuclides and Metals	1) Minimal Design Sampling 2) RTD area of 35 m^2 (375 ft^2) to 20 m (65 ft) bgs. 3) Disposal at ERDF or other approved disposal facililtyDisposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 35 m^2 (375 ft^2) to 20 m (65 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
118-K-1	This unit contains numerous trenches and vertical steel pipes of various sizes that contain radioactive solid waste from 105-K and 105-N Reactors. The trenches received miscellaneous debris. Some 100-N waste includes zirconium cladding hulls and basin sludge. An incinerator operated onsite for several years burning low-level contaminated combustible material. All contaminated burning was halted in October 1960. Six silos received reactor hardware, three silos contain incinerator ashes and two silos contain irradiated nickel plated boron balls from the emergency 3X system.	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
118-KE-2	118-KE-2, 105-KE Horizontal Control Rod Storage Cave	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
118-KW-2	118-KW-2, 105-KW Horizontal Control Rod Storage Cave	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
120-KE-1	120-KE-1, 183-KE Filter Waste Facility Dry Well, 100-KE-1, 183-KE Filter Water Facility, 183-KE Acid Neutralization Pit, 100-K-26	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI)	2137 m^2 (23,000 ft^2)	4.6 m (15 ft)	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Antimony, Total Chromium, Cr(VI)	1) Confirmation/Verification Sampling 2) RTD area of 2,137 m^2 (23,000 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty 4) Soil flushing supplemented with Bioinfiltration 5) Supplemental Ics	1) Minimal Design Sampling 2) RTD area of 2,137 m^2 (23,000 ft^2) to 26 m (85 ft) 12 m (40 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
120-KE-2	120-KE-2, 183-KE Filter Waste Facility French Drain, 100-KE-2, 183 KE Filter Water Facility	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI)	See 120-KE-1	See 120-KE-1	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Antimony, Total Chromium, Cr(VI)	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
120-KE-3	120-KE-3, 100-KE-3, 183-KE Filter Water Facility Trench	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI)	See 120-KE-1	See 120-KE-1	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Antimony, Total Chromium, Cr(VI)	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
120-KE-4	120-KE-4, 183-KE1 Sulfuric Acid Storage Tank	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	See 120-KE-1	See 120-KE-1	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Sulfate, Antimony, Total Chromium	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
120-KE-5	120-KE-5, 183-KE2 Sulfuric Acid Storage Tank	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	See 120-KE-1	See 120-KE-1	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Sulfate, Antimony, Total Chromium	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
120-KE-6	120-KE-6, 183-KE Sodium Dichromate Tank	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI)	See 120-KE-1	See 120-KE-1	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Antimony, Total Chromium, Cr(VI)	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
120-KE-8	120-KE-8, 165-KE Brine Pit, 165-KE Brine Mixing Tank	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	16 m^2 (176 ft^2)	3 m (10 ft)	Metals	1) Minimal Design Sampling 2) RTD area of 16 m^2 (176 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 16 m^2 (176 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
120-KE-9	120-KE-9, 183-KE Brine Pit, 183-KE Salt Dissolving Pits and Brine Pump Pit	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs), plus groundwater/surface water protection risk for Cr(VI)	See 120-KE-1	See 120-KE-1	Selenium, Lead, Zinc, Vanadium, Mercury, Copper, Manganese, Antimony, Total Chromium, Cr(VI)	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
120-KW-1	120-KW-1, 183-KW Filter Water Facility Dry Well, 100-KW-1, 183-KW Acid Neutralization Pit, 100-K-17	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
120-KW-2	120-KW-2, 183-KW Filter Water Facility French Drain, 100-KW-2	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
120-KW-3	120-KW-3, 183-KW1 Sulfuric Acid Storage Tank	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
120-KW-4	120-KW-4, 183-KW2 Sulfuric Acid Storage Tank	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
120-KW-5	120-KW-5, 183-KW Sodium Dichromate Storage Tank	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
120-KW-6	120-KW-6, 165-KW Brine Pit, 165-KW Brine Mixing Tank	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	16 m^2 (176 ft^2)	3 m (10 ft)	Metals	1) Minimal Design Sampling 2) RTD area of 16 m^2 (176 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 16 m^2 (176 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
120-KW-7	120-KW-7, 183-KW Brine Pit, 183-KW Salt Dissolving Pits and Brine Pump Pit	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
126-KE-2	126-KE-2, 183-KE Liquid Alum Storage Tank #2	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	See 120-KE-1	See 120-KE-1	Metals	Encompassed by alternative for 120-KE-1.	Encompassed by alternative for 120-KE-1.
128-K-2	Confirmatory evaluation concluded that remediation was required for this site.	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
130-K-2	130-K-2, 1717-K Waste Oil Storage Tank	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	22 m^2 (240 ft^2)	1.8 m (6 ft)	Metals, TPH, PAHs, and PCBs	1) Minimal Design Sampling 2) RTD area of 22 m^2 (240 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 22 m^2 (240 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
130-KE-1	130-KE-1, 105-KE Emergency Diesel Oil Storage Tank, 105-KE Emergency Diesel Fuel Tank The storage tank had a 7,600 L (2,000 gal) capacity. Once the storage tank was removed from the site, the site was backfilled with native soil to grade and covered with gravel.	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
130-KE-2	130-KE-2, 166-KE Oil Storage Tank The bunker is an underground, reinforced concrete structure. It has two compartments, each having a storage capacity of 3,033,629 L (801,400 gal).	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	2,694 m^2 (29,000 ft^2)	15.2 m (50 ft)	Metals, TPH, PAHs, and PCBs	1) Bioventing 2) Supplemental ICs	1) Minimal Design Sampling 2) RTD area of 2,694 m^2 (29,000 ft^2) to 15.2 m (50 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
130-KW-1	130-KW-1, 105-KW Emergency Diesel Oil Storage Tank, 130-KW-1A/130-KW-1B Tanks, 105-KW Emergency Diesel Fuel Tank	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	21 m^2 (225 ft^2)	4.9 m (16 ft)	TPH, Cs-137	1) Minimal Design Sampling 2) RTD area of 21 m^2 (225 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 21 m^2 (225 ft^2) to 4.9 m (16 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
130-KW-^{2}	130-KW-^{2}, 166-KW Oil Storage Tank The bunker is an underground, reinforced concrete structure. It has two compartments, each having a storage capacity of 3,033,629 L (801,400 gal).	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	2694 m^2 (29,000 ft^2)	15.2 m (50 ft)	Metals, TPH, PAHs, and PCBs	1) Bioventing 2) Supplemental ICs	1) Minimal Design Sampling 2) RTD area of 2,694 m^2 (29,000 ft^2) to 15.2 m (50 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
132-KE-1	132-KE-1, 116-KE Reactor Exhaust Stack The original height of this unit was 91.5 m (300 ft). The current height is 53.4 m (175 ft).	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
132-KW-1	132-KW-1, 116-KW Reactor Exhaust Stack The original height for this unit was 91.5 m (300 ft). The current height is 53.4 m (175 ft).	Post-ROD To-Go Site	Building/Structure	35 m^2 (380 ft^2)	4.6 m (15 ft)	Radionuclides and Metals	RTD (Building demolition)	RTD (Building demolition)
1607-K1	1607-K1, 1607-K1 Septic Tank and Associated Drain Field, 124-K-1, 1607-K1 Sanitary Sewer System, 1607-K1 Septic Tank	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	347 m^2 (3,740 ft^2)	4.6 m (15 ft)	Radionuclides, Metals, Nitrate, and Nitrite	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3,740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3,740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
							disposal facililty	approved disposal facililty
1607-K2	1607-K2, 1607-K2 Septic Tank and Associated Drain Field, 124-KE-1, 1607-K2 Sanitary Sewer System, 1607-K2 Septic Tank	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	347 m^2 (3,740 ft^2)	4.6 m (15 ft)	Radionuclides, Metals, Nitrate, and Nitrite	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3,740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3,740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
1607-K3	1607-K3, 1607-K3 Septic Tank and Associated Drain Field, 124-KW-2, 1607-K3 Sanitary Sewer System, 1607-K3 Septic Tank The tank and drain field are enclosed within a wooden fence and marked with Septic Tank and Drain Field signs.	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).
1607-K5	1607-K5, 1607-K5 Septic Tank and Associated Drain Field, 124-KE-2, 1607-K5 Sanitary Sewer System, 1607-K5 Septic Tank. The unit includes a tile field.	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	347 m^2 (3.740 ft^2)	4.6 m (15 ft)	Radionuclides, Metals, Nitrate, and Nitrite	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
1607-K6	1607-K6, 1607-K6 Septic Tank and Associated Drain Field, 124-KW-1, 1607-K6 Sanitary Sewer System, 1607-K6 Septic Tank. The unit includes a tile field and the piping from the facilities to the tile field.	Post-ROD To-Go Site	Human Health Direct Contact and/or Ecological risk likely in shallow soil (less than 4.6 m [15 ft] bgs)	347 m^2 (3,740 ft^2)	4.6 m (15 ft)	Radionuclides, Metals, Nitrate, and Nitrite	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty	1) Minimal Design Sampling 2) RTD area of 347 m^2 (3740 ft^2) to 4.6 m (15 ft) bgs. 3) Disposal at ERDF or other approved disposal facililty
600-29	Confirmatory evaluation/sampling concluded that remediation was required for portions of the site.	Pre-ROD To-Go Site	None	0	0	None	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).	Not evaluated. Site assumed to pass preliminary remediation goals (PRGs). If site fails PRGs, alternative evaluation will follow Post-ROD To-Go decision process (see Chapter 9).

Table J-1. Alternatives for Evaluated Waste Sites

General Waste Site Information		Information for Development of Alternatives[a]						
Waste Site	**Site Description**	**Rationale for Inclusion in Feasibility Study**	**Type of Exceedance (assumed for Post ROD To Go Sites)**	**Assumed Areal Footprint Requiring Remediation**	**Assumed Depth of Contamination Requiring Remediation**	**COPCs Considered for the FS (see Table 8-1)[b]**	**Alternative 2**	**Alternative 3**
UPR-100-K-1	UPR-100-K-1, 105-KE Fuel Storage Basin leak, UN-100-K-1	Post-ROD To-Go Site	Site near Reactor Groundwater/surface water protection risk likely for other COPCs	4459 m^2 (48,000 ft^2)	15.2 m (50 ft)	Radionuclides (e.g. Sr-90) and Metals	1) Surface Barrier After 75 years: 2) Remove Surface Barrier 3) Minimal Design Sampling 4) RTD area of 4,459 m^2 (48,000 ft^2) to 20 m (65 ft) bgs. 5) Disposal at ERDF or other approved disposal facililty	1) Surface Barrier After 75 years: 2) Remove Surface Barrier 3) Minimal Design Sampling 4) RTD area of 4,459 m^2 (48,000 ft^2) to 20 m (65 ft) bgs. 5) Disposal at ERDF or other approved disposal facililty

a. The actions assumed in Appendix J were developed for cost estimating purposes for this FS. Additional information on components of the alternatives is presented in Chapter 9.

b. Table 8-1 presents a summary of waste site COCs based on process knowledge.

ENVIRONMENTAL COST ESTIMATE

ECE-100KR411-00005

Environmental Cost Estimate for 100-K Waste Sites and Groundwater

Revision 0

Date: May 16, 2011

Project: CH2M HILL Plateau Remediation Company

Topic: Cost Analysis

Lead Estimator: N. Cavalleri

Senior Review: S. Ferries

Administrative Use

CHPRC ENVIRONMENTAL COST ESTIMATE COVER PAGE

Part 1: To be completed by the ER&QA Lead Cost Estimator

Project: 100K Area RI/FS Decision Document	**Date:** 05/16/2011
Calculation Title & Description: Environmental Cost Estimate for 100K Waste Sites and Groundwater	
N. Cavallen **Project Cost Estimator(s)**	**Basis of Qualification:** 24 years of experience; 14 years of Industrial, Commercial, and Residential construction experience, and 10 years of competitive bid estimating and engineers budgetary construction estimating.
E. Bermingham **Cost Estimate Checker**	**Basis of Qualification:** Landscape Architect with 5 years of experience in cost estimating principles and practices; 10 years of experience overall in Environmental Science and Landscape Architecture.
S. Ferries **ER & QA Lead Cost Estimator**	**Basis of Qualification:** Geologist with 27 years of experience; 15 years in cost estimating, and 13 years of RACERTM experience

Part 2: To be completed by Project Cost Estimator

Calculation No.: ECE-100KR411-00006 **Revision No.:** 0

Revision History:

Revision No.	Description	Date	Affected Pages
0	Initial Document	5/16/2011	All

Part 3: Document Review & Approval

Project Cost Estimator:	N. Cavallen/Cost Estimator NAME/POSITION SIGNATURE	5/16/2011 DATE
Cost Estimate Checker:	E. Bermingham/Cost Estimator NAME/POSITION SIGNATURE	5/16/2011 DATE
ER & QA Lead Cost Estimator:	S. Ferries/Sr. Cost Estimator NAME/POSITION SIGNATURE	5/16/11 DATE
Project Manager:	K. Ivarson/ NAME/POSITION SIGNATURE	5/16/11 DATE

Terms

AACE	Association for the Advancement of Cost Engineering International
CHPRC	CH2M HILL Plateau Remediation Company
DOE	U.S. Department of Energy
ECE	Environmental Cost Estimate
ECF	Environmental Calculation File
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
FICA	*Federal Insurance Contributions Act*
FP	Fixed-price
G&A	General and administrative
HSSA	Hanford Site Stabilization Agreement
MS Excel™	Microsoft Excel
O&M	Operation and Maintenance
OMB	Office of Management and Budget
PRC	Plateau Remediation Company
PW	Present Worth
RACER™	Remedial Action Cost Engineering and Requirements System (Cost Estimating Software)
RCTs	Radiological Control Technicians

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1 Purpose of Estimate

This ECE and cost estimate backup documentation supports the response action alternatives analysis for individual waste sites presented in *DOE/RL-2010-97 Decisional Draft, Remedial Investigation/Feasibility Study for the 100-KR-1, 100-KR-2, and 100-KR-4 Operable Units.* The purpose of this ECE is to:

- describe the methodology applied in performing the cost estimates;
- describe the general and response action-specific assumptions and cost inputs applied to the subject cost estimates; and
- summarize the response action alternative cost estimates.

The cost estimates for each waste site summarized in this ECE have been prepared for comparative response action evaluation(s) from the information available at the time of preparation. The cost estimates reflect specific response action approaches, and scope assumptions and exclusions as well as cost estimating methodologies. The response action cost estimates have expected ranges of accuracy described in the "Estimate Classification" section. The final costs of the selected response action will depend on actual labor and material costs, actual site conditions, productivity, competitive market conditions, final project scope, final project schedule, and other factors.

2 Scope of Work

A range of general response actions to meet Response Action Objectives were identified for vadose zone sites and contaminated groundwater at 100-K. Through the Feasibility Study screening process, several technologies were reviewed to determine suitability in remediating the identified sources and contaminant plumes. Through this process four alternatives were assembled and evaluated through cost.

Cost estimates have been completed for the following response action alternatives identified for the 100-KR-1, 100-KR-2, and 100-KR-4 OUs:

- Alternative 1 – No Action. The NCP requires consideration of a No Action Alternative to serve as a baseline for evaluating other remediation action alternatives and is retained throughout the FS process.

- Alternative 2 – Limited Action. Builds on the interim action previously completed and proposes limited additional actions for waste sites and groundwater.

- Alternative 3 – Removal, treatment, and disposal (RTD) Optimized with Other Technologies. Removal, treatment, and disposal (RTD) builds on the interim actions previously completed and provide additional technologies for surface water and groundwater protection.

- Alternative 4 – RTD and Focused and Aggressive Groundwater Treatment. A strategy of RTD would be applied at waste sites and groundwater treatment would be expanded from the interim action systems.

Alternatives 2, 3, and 4 all include the option of placing surface barriers over specific waste sites near the reactor facilities. Final remediation of these sites will be completed after reactor decommissioning.

3 Overall Costs

The cost estimate for the 100-K Waste Sites and Groundwater was developed in accordance with EPA/540/R-00/002, A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, OSWER 9355.0-75 (EPA, 2000). The Remedial Action Cost Engineering and Requirements (RACER™) cost estimating software was used in conjunction with Microsoft Excel (MS Excel) software to develop the cost estimate for each of the removal action alternatives.

RACER™ was used to develop both unit costs and lump sum direct costs for the vadose zone and groundwater remediation alternatives. The costs from RACER™ were manually transferred into the Excel Present Value (PV) workbook. The PV workbook was used to calculate the costs for Capital, Periodic, Annual and Present Value for each alternative.

3.1 Summary of Costs

The following tables, Table 1, 100-K Summary of Vadose Zone Sites; Table 2, 100-KR4 Groundwater; and Table 3, KR4 OU Institutional Controls present the costs for each alternative.

Table 1 summarizes the 56 Vadose Zone Site alternative costs and provides the following specific design information: Leaching Potential Monitoring Number of Samples Collected per Event Year, Excavation Volume (yd^3) Volume of Soil for Disposal (ton), Area of Bioinfiltration/Soil Flushing (acre), Area of In Situ Land Farming (acre), Bio Venting Wells (each), and Vapor Monitoring Wells (each).

Table 2 summarizes the 100-KR4 Groundwater alternatives costs and provides the following specific design information: Number of Extraction and Injection Wells, Pump and Treat Rate (gpm), and Average Well Depth (ft).

Table 3 summarizes the cost for the institutional controls for each alternative for the KR4 Operable Unit.

Table 1, 100-K Summary of Vadose Zone Sites.

COMPARISON OF TOTAL COST OF REMEDIAL ACTION ALTERNATIVES*

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K Area Vadose Zone Alternatives Total	**No Action**		**Limited Action**		**RTD Optimized with Other Technologies**		**RTD Focused and Aggressive Groundwater Treatment**	
Leaching Potemtial Monitoring Number of Samples Collected Per Event Year			**71**		**71**			
Excavation Volume (yd3)			**1,740,000**		**1,740,000**		**7,410,000**	
Volume of soil for Disposal(ton)			**2,190,000**		**2,190,000**		**4,960,000**	
Area of BioInfiltration/Soil Flushing (acre)					**43.72**			
Area of In Situ Land Farming (acre)					**1.84**			
BioVenting Wells (each)					**5**			
Vapor Monitoring Wells (each)					**6**			
Capital Cost	$0		$388,800,000		$407,911,000		$720,403,000	
Total Annual Cost	$0		$0		$474,000		$0	
Total Periodic Cost	$0		$3,482,000		$2,300,000		$29,580,000	
Non-Discounted	**$0**		**$392,282,000**		**$410,685,000**		$749,983,000	
Total Present Value of Alternative (Discounted)	**$0**		**$390,931,000**		**$409,601,000**		**$725,780,000**	
	Expected Accuracy Range		**Expected Accuracy Range**		**Expected Accuracy Range**		**Expected Accuracy Range**	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$586,397,000	$273,652,000	$614,402,000	$286,721,000	$1,088,670,000	$508,046,000

100-K-1 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-1	**1) No Action**		**1) Minimal Design Sampling 2) RTD to 15 FT**		**1) Minimal Design Sampling 2) RTD to 15 FT**		**1) Minimal Design Sampling 2) RTD to 15 FT**	
Total Project Duration (years)	**0**		**1**		**1**		**1**	
Capital Cost	$0		$449,000		$449,000		$449,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$449,000**		**$449,000**		**$449,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$449,000**		**$449,000**		**$449,000**	
	Expected Accuracy Range		**Expected Accuracy Range**		**Expected Accuracy Range**		**Expected Accuracy Range**	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$674,000	$315,000	$674,000	$315,000	$674,000	$315,000

100-K-5 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-5	**1) No Action**		**1) Minimal Design Sampling 2) RTD to 15 FT**		**1) Minimal Design Sampling 2) RTD to 15 FT**		**1) Minimal Design Sampling 2) RTD to 15 FT**	
Total Project Duration (years)	**0**		**1**		**1**		**1**	
Capital Cost	$0		$440,000		$440,000		$440,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$440,000**		**$440,000**		**$440,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$440,000**		**$440,000**		**$440,000**	
	Expected Accuracy Range		**Expected Accuracy Range**		**Expected Accuracy Range**		**Expected Accuracy Range**	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$660,000	$308,000	$660,000	$308,000	$660,000	$308,000

100-K-13 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-13	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$440,000		$440,000		$440,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$440,000**		**$440,000**		**$440,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$440,000**		**$440,000**		**$440,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$660,000	$308,000	$660,000	$308,000	$660,000	$308,000

100-K-14 Vadose Zone Site

COMPARISON OF TOTAL COST OF REMEDIAL ACTION ALTERNATIVES*								
Site:	100 K			**Base Year:**			2011	
Location:	Hanford, WA			**Date:**			5/9/2011	
Phase:	RI/FS			**Rev:**			0	
	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-14	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$458,000		$458,000		$458,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$458,000**		**$458,000**		**$458,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$458,000**		**$458,000**		**$458,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$687,000	$321,000	$687,000	$321,000	$687,000	$321,000

100-K-43 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-43	1) No Action		1) Institutional Controls*		1) Institutional Controls*		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		75		75		1	
Capital Cost	$0		$0		$0		$6,006,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$0**		**$0**		**$6,006,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$0**		**$0**		**$6,006,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$0	$0	$0	$0	$9,009,000	$4,205,000

100-K-47 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-47	1) No Action		1) Institutional Controls*		1) Institutional Controls*		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		75		75		1	
Capital Cost	$0		$0		$0		$23,507,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$0**		**$0**		**$23,507,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$0**		**$0**		**$23,507,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$0	$0	$0	$0	$35,261,000	$16,455,000

100-K-48 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-48	1) No Action		1) Monitoring		1) In Situ Land Farming		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		10		1		1	
Capital Cost	$0		$0		$38,000		$539,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$12,000		$0		$0	
Non-Discounted	**$0**		**$12,000**		**$38,000**		**$539,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$11,000**		**$38,000**		**$539,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$17,000	$8,000	$57,000	$27,000	$809,000	$378,000

100-K-49 Vadose Zone Site

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-49	1) No Action		1) Monitoring		1) In Situ Land Farming		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		10		1		1	
Capital Cost	$0		$0		$38,000		$482,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$12,000		$0		$0	
Non-Discounted	**$0**		**$12,000**		**$38,000**		**$482,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$11,000**		**$38,000**		**$482,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$17,000	$8,000	$57,000	$27,000	$723,000	$338,000

100-K-50 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-50	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$440,000		$440,000		$440,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$440,000**		**$440,000**		**$440,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$440,000**		**$440,000**		**$440,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$660,000	$308,000	$660,000	$308,000	$660,000	$308,000

100-K-54 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-54	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$914,000		$914,000		$917,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$914,000**		**$914,000**		**$917,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$914,000**		**$914,000**		**$917,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$1,371,000	$640,000	$1,371,000	$640,000	$1,376,000	$642,000

100-K-55:2 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-55:2	1) No Action		1) Minimal Design Sampling 2) RTD to 20.3 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 20.3 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		50		50		1	
Capital Cost	$0		$743,000		$743,000		$4,547,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$190,000		$190,000		$0	
Non-Discounted	**$0**		**$933,000**		**$933,000**		**$4,547,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$845,000**		**$845,000**		**$4,547,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$1,268,000	$592,000	$1,268,000	$592,000	$6,821,000	$3,183,000

100-K-56:2 Vadose Zone Site

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-56:2	1) No Action		1) Minimal Design Sampling 2) RTD to 18.3 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 18.3 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		50		50		1	
Capital Cost	$0		$705,000		$705,000		$2,627,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$190,000		$190,000		$0	
Non-Discounted	**$0**		**$895,000**		**$895,000**		**$2,627,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$807,000**		**$807,000**		**$2,627,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$1,211,000	$565,000	$1,211,000	$565,000	$3,941,000	$1,839,000

100-K-57 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-57	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 15 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		50		50		1	
Capital Cost	$0		$3,925,000		$3,925,000		$20,368,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$190,000		$190,000		$0	
Non-Discounted	**$0**		**$4,115,000**		**$4,115,000**		**$20,368,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$4,027,000**		**$4,027,000**		**$20,368,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$6,041,000	$2,819,000	$6,041,000	$2,819,000	$30,552,000	$14,258,000

100-K-60 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-60	1) No Action		1) Institutional Controls*		1) Institutional Controls*		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		75		75		1	
Capital Cost	$0		$0		$0		$8,702,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$0**		**$0**		**$8,702,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$0**		**$0**		**$8,702,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$0	$0	$0	$0	$13,053,000	$6,092,000

100-K-61 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-61	1) No Action		1) Demo 3,225 SQFT BLDG		1) Demo 3,225 SQFT BLDG		1) Demo 3,225 SQFT BLDG	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$10,014,000		$10,014,000		$10,014,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$10,014,000**		**$10,014,000**		**$10,014,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$10,014,000**		**$10,014,000**		**$10,014,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$15,021,000	$7,010,000	$15,021,000	$7,010,000	$15,021,000	$7,010,000

100-K-63 Vadose Zone Site

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-63	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 15 FT 3) Soil Flushing 4) Ground Water Monitoring		1) Minimal Design Sampling 2) RTD to 32.8 FT	
Total Project Duration (years)	0		50		50		1	
Capital Cost	$0		$105,757,000		$112,583,000		$228,313,000	
Total Annual Cost	$0		$0		$192,000		$0	
Total Periodic Cost	$0		$460,000		$460,000		$0	
Non-Discounted	**$0**		**$106,217,000**		**$113,235,000**		**$228,313,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$106,002,000**		**$113,014,000**		**$228,313,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$159,003,000	$74,202,000	$169,521,000	$79,110,000	$342,470,000	$159,820,000

100-K-64 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-64	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 15 FT 3) Soil Flushing 4) Ground Water Monitoring		1) Minimal Design Sampling 2) RTD to 32.8 FT	
Total Project Duration (years)	0		50		50		1	
Capital Cost	$0		$91,168,000		$97,995,000		$192,804,000	
Total Annual Cost	$0		$0		$192,000		$0	
Total Periodic Cost	$0		$460,000		$460,000		$0	
Non-Discounted	**$0**		**$91,628,000**		**$98,647,000**		**$192,804,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$91,413,000**		**$98,426,000**		**$192,804,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$137,120,000	$63,990,000	$147,639,000	$68,899,000	$289,206,000	$134,963,000

100-K-66 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-66	1) No Action		1) Demo 26,400 SQFT BLDG		1) Demo 26,400 SQFT BLDG		1) Demo 26,400 SQFT BLDG	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$69,798,000		$69,798,000		$69,798,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$69,798,000**		**$69,798,000**		**$69,798,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$69,798,000**		**$69,798,000**		**$69,798,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$104,697,000	$48,859,000	$104,697,000	$48,859,000	$104,697,000	$48,859,000

100-K-67 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-67	1) No Action		1) Demo 26,400 SQFT BLDG		1) Demo 26,400 SQFT BLDG		1) Demo 26,400 SQFT BLDG	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$69,798,000		$69,798,000		$69,798,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$69,798,000**		**$69,798,000**		**$69,798,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$69,798,000**		**$69,798,000**		**$69,798,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$104,697,000	$48,859,000	$104,697,000	$48,859,000	$104,697,000	$48,859,000

100-K-72 Vadose Zone Site

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-72	1) No Action		1) Institutional Controls*		1) Institutional Controls*		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		75		75		1	
Capital Cost	$0		$0		$0		$2,451,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$0**		**$0**		**$2,451,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$0**		**$0**		**$2,451,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$0	$0	$0	$0	$3,677,000	$1,716,000

100-K-73 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-73	1) No Action		1) Leaching Potential Monitoring		1) BioInfiltration 2) Ground Water Monitoring		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		50		50		1	
Capital Cost	$0		$0		$968,000		$2,382,000	
Total Annual Cost	$0		$0		$18,000		$0	
Total Periodic Cost	$0		$190,000		$120,000		$0	
Non-Discounted	**$0**		**$190,000**		**$1,106,000**		**$2,382,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$102,000**		**$1,050,000**		**$2,382,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$153,000	$72,000	$1,575,000	$735,000	$3,573,000	$1,668,000

100-K-74 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-74	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 15 FT 3) Soil Flushing 4) Ground Water Monitoring		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		50		50		1	
Capital Cost	$0		$459,000		$1,357,000		$2,505,000	
Total Annual Cost	$0		$0		$18,000		$0	
Total Periodic Cost	$0		$190,000		$140,000		$0	
Non-Discounted	**$0**		**$649,000**		**$1,515,000**		**$2,505,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$561,000**		**$1,449,000**		**$2,505,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$842,000	$393,000	$2,174,000	$1,015,000	$3,758,000	$1,754,000

100-K-75 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-75	1) No Action		1) Institutional Controls*		1) Institutional Controls*		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		75		75		1	
Capital Cost	$0		$0		$0		$2,467,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$0**		**$0**		**$2,467,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$0**		**$0**		**$2,467,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50% $0	-30% $0	+50% $0	-30% $0	+50% $0	-30% $0	+50% $3,701,000	-30% $1,727,000

100-K-79 Vadose Zone Site

Site:	100 K			**Base Year:**			2011	
Location:	Hanford, WA			**Date:**			5/9/2011	
Phase:	RI/FS			**Rev:**			0	
	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-79	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$504,000		$504,000		$504,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$504,000**		**$504,000**		**$504,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$504,000**		**$504,000**		**$504,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50% $0	-30% $0	+50% $756,000	-30% $353,000	+50% $756,000	-30% $353,000	+50% $756,000	-30% $353,000

100-K-80 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-80	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 15 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		50		50		1	
Capital Cost	$0		$560,000		$560,000		$2,850,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$190,000		$190,000		$0	
Non-Discounted	**$0**		**$750,000**		**$750,000**		**$2,850,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$662,000**		**$662,000**		**$2,850,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50% $0	-30% $0	+50% $993,000	-30% $464,000	+50% $993,000	-30% $464,000	+50% $4,275,000	-30% $1,995,000

100-K-81 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-81	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$441,000		$441,000		$446,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$441,000**		**$441,000**		**$446,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$441,000**		**$441,000**		**$446,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50% $0	-30% $0	+50% $662,000	-30% $309,000	+50% $662,000	-30% $309,000	+50% $669,000	-30% $313,000

100-K-82 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-82	1) No Action		1) Surface Barrier 9,520 SQFT		1) Surface Barrier 9,520 SQFT		1) Surface Barrier 9,520 SQFT • AFTER 75 years 1) Minimal design sampling 2) RTD to 65.6 FT Deep	
Total Project Duration (years)	0		1		1		75	
Capital Cost	$0		$154,000		$154,000		$154,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$5,477,000	
Non-Discounted	**$0**		**$154,000**		**$154,000**		**$5,631,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$154,000**		**$154,000**		**$1,150,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$231,000	$108,000	$231,000	$108,000	$1,725,000	$805,000

100-K-83 Vadose Zone Site

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-83	1) No Action		1) Institutional Controls*		1) Institutional Controls*		1) Minimal Design Sampling 2) RTD to 32.8 FT	
Total Project Duration (years)	0		75		75		1	
Capital Cost	$0		$0		$0		$2,400,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$0**		**$0**		**$2,400,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$0**		**$0**		**$2,400,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$0	$0	$0	$0	$3,600,000	$1,680,000

100-K-94 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-94	1) No Action		1) Institutional Controls*		1) Institutional Controls*		1) Minimal Design Sampling 2) RTD to 32.8 FT	
Total Project Duration (years)	0		75		75		1	
Capital Cost	$0		$0		$0		$653,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$0**		**$0**		**$653,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$0**		**$0**		**$653,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$0	$0	$0	$0	$980,000	$458,000

100-K-99 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-99	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$5,953,000		$5,953,000		$5,953,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$5,953,000**		**$5,953,000**		**$5,953,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$5,953,000**		**$5,953,000**		**$5,953,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$8,930,000	$4,168,000	$8,930,000	$4,168,000	$8,930,000	$4,168,000

100-K-100 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-100	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$5,917,000		$5,917,000		$5,917,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$5,917,000**		**$5,917,000**		**$5,917,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$5,917,000**		**$5,917,000**		**$5,917,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$8,876,000	$4,142,000	$8,876,000	$4,142,000	$8,876,000	$4,142,000

100-K-101 Vadose Zone Site

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-101	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$6,223,000		$6,223,000		$6,223,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$6,223,000**		**$6,223,000**		**$6,223,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$6,223,000**		**$6,223,000**		**$6,223,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$9,335,000	$4,357,000	$9,335,000	$4,357,000	$9,335,000	$4,357,000

100-K-103 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-103	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$805,000		$805,000		$805,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$805,000**		**$805,000**		**$805,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$805,000**		**$805,000**		**$805,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$1,208,000	$564,000	$1,208,000	$564,000	$1,208,000	$564,000

100-K-104 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-104	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$434,000		$434,000		$434,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$434,000**		**$434,000**		**$434,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$434,000**		**$434,000**		**$434,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$651,000	$304,000	$651,000	$304,000	$651,000	$304,000

100-K-105 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-105	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$436,000		$436,000		$436,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$436,000**		**$436,000**		**$436,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$436,000**		**$436,000**		**$436,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$654,000	$306,000	$654,000	$306,000	$654,000	$306,000

100-K-106 Vadose Zone Site

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-106	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 32.8 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$482,000		$482,000		$722,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$482,000**		**$482,000**		**$722,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$482,000**		**$482,000**		**$722,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$723,000	$338,000	$723,000	$338,000	$1,083,000	$506,000

100-K-107 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-107	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$438,000		$438,000		$438,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$438,000**		**$438,000**		**$438,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$438,000**		**$438,000**		**$438,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$657,000	$307,000	$657,000	$307,000	$657,000	$307,000

100-K-108 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
100-K-108	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$821,000		$821,000		$821,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$821,000**		**$821,000**		**$821,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$821,000**		**$821,000**		**$821,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$1,232,000	$575,000	$1,232,000	$575,000	$1,232,000	$575,000

116-K-3 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
116-K-3	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT 3) Leaching Potential Monitoring		1) Minimal Design Sampling 2) RTD to 15 FT 3) Soil Flushing 4) Ground Water Monitoring		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		50		50		1	
Capital Cost	$0		$480,000		$1,377,000		$2,561,000	
Total Annual Cost	$0		$0		$18,000		$0	
Total Periodic Cost	$0		$190,000		$120,000		$0	
Non-Discounted	**$0**		**$670,000**		**$1,515,000**		**$2,561,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$582,000**		**$1,459,000**		**$2,561,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50% $0	-30% $0	+50% $873,000	-30% $408,000	+50% $2,189,000	-30% $1,022,000	+50% $3,842,000	-30% $1,793,000

116-KE-1 Vadose Zone Site

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
116-KE-1	1) No Action		1) Surface Barrier 4,500 SQFT		1) Surface Barrier 4,500 SQFT		1) Surface Barrier 4,500 SQFT • AFTER 75 years 1) Minimal design sampling 2) RTD to 65.6 FT Deep	
Total Project Duration (years)	0		1		1		75	
Capital Cost	$0		$77,000		$77,000		$77,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$3,056,000	
Non-Discounted	**$0**		**$77,000**		**$77,000**		**$3,133,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$77,000**		**$77,000**		**$633,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50% $0	-30% $0	+50% $116,000	-30% $54,000	+50% $116,000	-30% $54,000	+50% $950,000	-30% $444,000

116-KE-2 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
116-KE-2	1) No Action		1) Leaching Potential Monitoring		1) BioInfiltration 2) Ground Water Monitoring		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		50		50		1	
Capital Cost	$0		$0		$968,000		$2,461,000	
Total Annual Cost	$0		$0		$18,000		$0	
Total Periodic Cost	$0		$190,000		$120,000		$0	
Non-Discounted	**$0**		**$190,000**		**$1,106,000**		**$2,461,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$102,000**		**$1,050,000**		**$2,461,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50% $0	-30% $0	+50% $153,000	-30% $72,000	+50% $1,575,000	-30% $735,000	+50% $3,692,000	-30% $1,723,000

116-KW-1 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
116-KW-1	1) No Action		1) Surface Barrier 4,500 SQFT		1) Surface Barrier 4,500 SQFT		1) Surface Barrier 4,500 SQFT • AFTER 75 years 1) Minimal design sampling 2) RTD to 65.6 FT Deep	
Total Project Duration (years)	0		1		1		75	
Capital Cost	$0		$77,000		$77,000		$77,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$3,056,000	
Non-Discounted	**$0**		**$77,000**		**$77,000**		**$3,133,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$77,000**		**$77,000**		**$633,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50% $0	-30% $0	+50% $116,000	-30% $54,000	+50% $116,000	-30% $54,000	+50% $950,000	-30% $444,000

116-KW-2 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
116-KW-2	1) No Action		1) Leaching Potential Monitoring		1) BioInfiltration 2) Ground Water Monitoring		1) Minimal Design Sampling 2) RTD to 65.6 FT	
Total Project Duration (years)	0		50		50		1	
Capital Cost	$0		$0		$968,000		$2,543,000	
Total Annual Cost	$0		$0		$18,000		$0	
Total Periodic Cost	$0		$190,000		$120,000		$0	
Non-Discounted	**$0**		**$190,000**		**$1,106,000**		**$2,543,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$102,000**		**$1,050,000**		**$2,543,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$153,000	$72,000	$1,575,000	$735,000	$3,815,000	$1,781,000

120-KE-1 Vadose Zone Site

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
120-KE-1	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$2,993,000		$2,993,000		$2,993,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$2,993,000**		**$2,993,000**		**$2,993,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$2,993,000**		**$2,993,000**		**$2,993,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$4,490,000	$2,096,000	$4,490,000	$2,096,000	$4,490,000	$2,096,000

120-KE-8 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
120-KE-8	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$454,000		$454,000		$454,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$454,000**		**$454,000**		**$454,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$454,000**		**$454,000**		**$454,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$681,000	$318,000	$681,000	$318,000	$681,000	$318,000

120-KW-6 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
120-KW-6	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$454,000		$454,000		$454,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$454,000**		**$454,000**		**$454,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$454,000**		**$454,000**		**$454,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$681,000	$318,000	$681,000	$318,000	$681,000	$318,000

130-K-2 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
130-K-2	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$463,000		$463,000		$463,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$463,000**		**$463,000**		**$463,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$463,000**		**$463,000**		**$463,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$695,000	$325,000	$695,000	$325,000	$695,000	$325,000

130-KE-2 Vadose Zone Site

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
130-KE-2	1) No Action		1) Monitoring		1) BioVenting Wells 2) Vapor Monitoring Wells		1) Minimal Design Sampling 2) RTD to 50 FT	
Total Project Duration (years)	0		10		1		1	
Capital Cost	$0		$0		$269,000		$11,758,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$404,000		$0		$0	
Non-Discounted	**$0**		**$404,000**		**$269,000**		**$11,758,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$342,000**		**$269,000**		**$11,758,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$513,000	$240,000	$404,000	$189,000	$17,637,000	$8,231,000

130-KW-1 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
130-KW-1	1) No Action		1) Monitoring		1) BioVenting Wells 2) Vapor Monitoring Wells		1) Minimal Design Sampling 2) RTD to 16 FT	
Total Project Duration (years)	0		10		1		1	
Capital Cost	$0		$0		$145,000		$468,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$20,000		$0		$0	
Non-Discounted	**$0**		**$20,000**		**$145,000**		**$468,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$17,000**		**$145,000**		**$468,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$26,000	$12,000	$218,000	$102,000	$702,000	$328,000

130-KW-2 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
130-KW-2	1) No Action		1) Monitoring		1) BioVenting Wells 2) Vapor Monitoring Wells		1) Minimal Design Sampling 2) RTD to 50 FT	
Total Project Duration (years)	0		10		1		1	
Capital Cost	$0		$0		$269,000		$11,758,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$404,000		$0		$0	
Non-Discounted	**$0**		**$404,000**		**$269,000**		**$11,758,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$342,000**		**$269,000**		**$11,758,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$513,000	$240,000	$404,000	$189,000	$17,637,000	$8,231,000

132-KW-1 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
132-KW-1	1) No Action		1) Demo 380 SQFT BLDG		1) Demo 380 SQFT BLDG		1) Demo 380 SQFT BLDG	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$1,083,000		$1,083,000		$1,083,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$1,083,000**		**$1,083,000**		**$1,083,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$1,083,000**		**$1,083,000**		**$1,083,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$1,625,000	$759,000	$1,625,000	$759,000	$1,625,000	$759,000

1607-K1 Vadose Zone Site

Site:	100 K	**Base Year:**	2011
Location:	Hanford, WA	**Date:**	5/9/2011
Phase:	RI/FS	**Rev:**	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
1607-K1	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$832,000		$832,000		$832,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$832,000**		**$832,000**		**$832,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$832,000**		**$832,000**		**$832,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$1,248,000	$583,000	$1,248,000	$583,000	$1,248,000	$583,000

1607-K2 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
1607-K2	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$832,000		$832,000		$832,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$832,000**		**$832,000**		**$832,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$832,000**		**$832,000**		**$832,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$1,248,000	$583,000	$1,248,000	$583,000	$1,248,000	$583,000

1607-K5 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
1607-K5	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$832,000		$832,000		$832,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$832,000**		**$832,000**		**$832,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$832,000**		**$832,000**		**$832,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$1,248,000	$583,000	$1,248,000	$583,000	$1,248,000	$583,000

1607-K6 Vadose Zone Site

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
1607-K6	1) No Action		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT		1) Minimal Design Sampling 2) RTD to 15 FT	
Total Project Duration (years)	0		1		1		1	
Capital Cost	$0		$832,000		$832,000		$832,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$832,000**		**$832,000**		**$832,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$832,000**		**$832,000**		**$832,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50% $0	-30% $0	+50% $1,248,000	-30% $583,000	+50% $1,248,000	-30% $583,000	+50% $1,248,000	-30% $583,000

UPR-100-K-1 Vadose Zone Site

Site:	100 K			**Base Year:**			2011	
Location:	Hanford, WA			**Date:**			5/9/2011	
Phase:	RI/FS			**Rev:**			0	
	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
UPR-100-K-1	1) No Action		1) Surface Barrier 48,000 SQFT		1) Surface Barrier 48,000 SQFT		1) Surface Barrier 48,000 SQFT • AFTER 75 years 1) Minimal design sampling 2) RTD to 65.6 FT Deep	
Total Project Duration (years)	0		1		1		75	
Capital Cost	$0		$715,000		$715,000		$715,000	
Total Annual Cost	$0		$0		$0		$0	
Total Periodic Cost	$0		$0		$0		$17,991,000	
Non-Discounted	**$0**		**$715,000**		**$715,000**		**$18,706,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$715,000**		**$715,000**		**$3,984,000**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50% $0	-30% $0	+50% $1,073,000	-30% $501,000	+50% $1,073,000	-30% $501,000	+50% $5,976,000	-30% $2,789,000

Table 2, 100-KR4 Groundwater.

COMPARISON OF TOTAL COST OF GROUNDWATER ALTERNATIVES*

Site:	100 KR4	Base Year:	2011
Location:	Hanford, WA	Date:	5/9/2011
Phase:	RI/FS	Rev:	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	No Action		Limited Action		RTD Optimized with Other		RTD Focused and Aggressive	
Extraction and Injection wells	NA		51		51 to 89		49 to 113	
Pump and Treat Rate, gpm	NA		935		935 to 690		880 to 2360	
Average Well Depth, ft	NA		100		100		100	
Total Project Duration (years)	0		20		20		10	
Capital Cost	$0		$0		$5,636,000		$103,384,000	
Total O&M Cost	$0		$842,308,000		$67,811,000		$173,477,000	
Total Periodic Cost	$0		$9,137,000		$6,006,000		$569,000	
Non-Discounted	**$0**		**$851,445,000**		**$79,453,000**		**$277,430,000**	
Total Present Value of Alternative (Discounted)	**$0**		**$400,392,000**		**$69,896,000**		**$258,750,000**	
	Range of Accuracy		Range of Accuracy		Range of Accuracy		Range of Accuracy	
	+50% $0	-30% $0	+50% $600,588,000	-30% $280,275,000	+50% $104,844,000	-30% $48,928,000	+50% $388,125,000	-30% $181,125,000

*Notes:
Present Value discount % used is 2.3%
Range of accuracy is expected to be +50%/-30%

Table 3, KR4 OU Institutional Controls.

COMPARISON OF TOTAL COST OF REMEDIAL ACTION ALTERNATIVES*

Site:	100 K	Base Year:	2011
Location:	Hanford, WA	Date:	5/9/2011
Phase:	RI/FS	Rev:	0

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
KR-4 OU IC's (Groundwater & Vadose Zone sites)	1) No Action		1) 100-K Area IC's		1) 100-K Area IC's		1) No IC's Required	
Total Project Duration (years)	0		75		75		0	
Capital Cost	$0		$0		$0		$0	
Total Annual Cost	$0		$17,690,000		$17,690,000		$0	
Total Periodic Cost	$0		$0		$0		$0	
Non-Discounted	**$0**		**$17,690,000**		**$17,690,000**		**$0**	
Total Present Value of Alternative (Discounted)	**$0**		**$8,425,000**		**$8,425,000**		**$0**	
	Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range		Expected Accuracy Range	
	+50%	-30%	+50%	-30%	+50%	-30%	+50%	-30%
	$0	$0	$12,638,000	$5,898,000	$12,638,000	$5,898,000	$0	$0

*Notes:
Present Value discount % used is 2.3%
Range of accuracy is expected to be +50%/-30%

4 Major Assumptions

The following subsections present the two different types of assumptions and inputs used for this cost estimate. The first type are general assumptions and inputs, which can be applied to most cost estimates without modification or adjustment, and include inputs such as labor rates, and direct and indirect cost factors. The second type of assumptions and inputs described are those specifically applicable to the identified response action alternatives and associated remedial technologies and processes. The alternative- specific inputs include RTD specific criteria such as amount of material excavated and sent to ERDF for disposal.

4.1 General Assumptions and Inputs

General assumptions apply to all response action cost estimates. The general assumptions discussed in the sections below include direct and indirect cost assumptions and other general pricing assumptions.

4.1.1 General Direct Cost Assumptions

Direct costs in the RACER™ system include all costs that can be directly attributed to a particular construction activity or item of work required to accomplish the project. Typical direct cost items include: Labor, Material, Equipment, and Sub Bid items. Direct cost assumptions for this estimate include:

- Scope and Bid Contingencies, see Section 8
- Project management, remedial design, and construction management capital costs, see Section 9
- Operating and periodic costs.
- Construction labor are detailed in Section 15
- Material.
- Equipment units were estimated based on standard commercial estimating resources and databases: RS Means, *ECHOS Environmental Remediation Cost Data – Unit Price*; Means 2010a, *Building Construction Cost Data*; *and* 2010b, *Heavy Construction Cost Data*. The units may have

been factored or adjusted by the estimator as appropriate to reflect influences by contract, work site, or other identified project or special conditions.

4.1.2 General Indirect Cost Assumptions

Indirect costs are costs not directly attributable to the completion of an activity. Indirect costs are typically allocated or spread across all activities on a predetermined basis. Indirect costs items can include the following job-related overhead items: Taxes; Project-specific insurance; Bonds; Permits and licenses; General supervision; Temporary office personnel; Schedules; Preparatory work and testing services; Temporary project facilities; Temporary utilities; Operations and maintenance of temporary project-site facilities; Project vehicles; Personal protective equipment and OSHA requirements; Quality controls; Mobilization and demobilization; and Site security.

Indirect cost assumptions for this estimate include:

- Markups are included for profit and G&A, see Section 7

4.2 Response Activity-Specific Assumptions and Inputs

Assumptions specific to the proposed response activities for this cost estimate are described in detail below.

All quantity assumptions and inputs for the cost estimate are described in detail within the 100-K Waste Sites and Groundwater ECF document. An example of the quantity inputs used within the RACER™ cost estimating software is summarized in Table 4.

Vadose Zone Sites Alternative 1- No Action:

Vadose Zone Sites Alternative 2- Limited Action:

The following assumptions are based on information for waste sites for the 100-K Area compiled in 100-K Groundwater Operable Unit (OU) Remedial Investigation/Feasibility Study (RI/FS) – DOE/RL-2010-97 (Appendix J)

Site 100-K-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [100 ft2 X 5ft]
- Remove to 15 ft X 100 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-100: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [47,000 ft2 X 12 ft]
- Remove to 15 ft X 47,000 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-101: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [49,750 ft2 X 12 ft]

- Remove to 15 ft X 49,750 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-103: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-104: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [8 ft2 X 15 ft]
- Remove to 15 ft X 8 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-105: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [36 ft2 X 15 ft]
- Remove to 15 ft X 36 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-106: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [400 ft2 X 15 ft]
- Remove to 15 ft X 400 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-107: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [16 ft2 X 15 ft]
- Remove to 15 ft X 16 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-108: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15ft]
- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-13: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [49 ft2 X 6 ft]
- Remove to 15 ft X 49 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-14: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [63 ft2 X 15 ft]
- Remove to 15 ft X 63 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-43: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site (Mobile/Sr-90)

- Institutional Controls for No-digging and No-drill included on Admin_LUC1_100K_4272011.xltm

Site 100-K-47: Source Type: Process Sewer Waste Site; FS Group: Post ROD To-Go Site

- Institutional Controls for No-digging and No-drill included on Admin_LUC1_100K_4272011.xltm

Site 100-K-48: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- MNA on MNA_100K_Updated_4272011.xltm
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 100-K-49: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- MNA on MNA_100K_Updated_4272011.xltm
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 100-K-5: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [25 ft2 X 15 ft]
- Remove to 15 ft X 25 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-50: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [175 ft2 X 15 ft]
- Remove to 15 ft X 175 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-54: Source Type: Pipe/Conveyance Site; FS Group Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [4,459 ft2 X 8 ft]
- Remove to 15 ft X 4,459 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-55:2: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [2,870 ft2 X 20.3 ft]

- Remove to 20.3 ft X 2,870 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-56:2: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [2,870 ft2 X 18.3 ft]
- Remove to 18.3 ft X 2,870 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-57: Source Type: Drainage Ditch Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [26,500 ft2 X 5 ft]
- Remove to 15 ft X 26,500 ft2 with treatment at ERDF (Excavation_100Kb_updated3172011.xltm)
- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-60: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Institutional Controls for No-digging and No-drill included on Admin_LUC1_100K_4272011.xltm

Site 100-K-61: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 3,225 square feet building (foundation 40 ft bgs)

Site 100-K-63: Source Type: Unplanned Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [1,044,900 ft2 X 15 ft]
- Remove to 15 ft X 1,044,900 ft2 with treatment at ERDF (Excavation_100Kb_updated3172011.xltm)
- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-64: Source Type: Unplanned Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [900,000 ft2 X 15 ft]
- Remove to 15 ft X 900,000 ft2 with treatment at ERDF (Excavation_100Kb_updated3172011.xltm)
- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-66: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 26,400 square feet building (foundation is 15 ft bgs)

Site 100-K-67: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 26,400 square feet building (foundation is 15 ft bgs)

Site 100-K-72: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Institutional Controls for No-digging and No-drill included on Admin_LUC1_100K_4272011.xltm

Site 100-K-73: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-74: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [26,500 ft2 X 5 ft]
- Remove to 15 ft X 26,500 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-75: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Institutional Controls for No-digging and No-drill included on Admin_LUC1_100K_4272011.xltm

Site 100-K-79: Source Type: Product Piping Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [570 ft2 X 15 ft]

- Remove to 15 ft X 570 ft2 with treatment at ERDF (Excavation_100Kc_updated4272011.xltm)
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 100-K-80: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [1,000 ft2 X 8 ft]
- Remove to 15 ft X 1,000 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-81: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [75 ft2 X 5 ft]
- Remove to 15 ft X 75 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-82: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Surface barrier at 9,520 ft2 (Capping_100K_4272011.xltm)
- AFTER 75 Years
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-83: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-94: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-99: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [47,600 ft2 X 12 ft]
- Remove to 15 ft X 47,600 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 116-K-3: Source Type: Concentrated Dichromate Site; FS Group: Post ROD To-Go Site (Mobile/Cr(VI))

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [400 ft2 X 5 ft]
- Remove to 15 ft X 400 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 116-KE-1: Source Type: Crib Waste Site; FS Group: Post ROD To-Go Site

- Surface barrier at 4,500 ft2 (Capping_100K_4272011.xltm)
- AFTER 75 Years
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 116-KE-2: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 116-KW-1: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Surface barrier at 4,500 ft2 (Capping_100K_4272011.xltm)
- AFTER 75 Years
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 116-KW-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site (Mobile Cr(VI))

- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 120-KE-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [23,000 ft2 X 15 ft]
- Remove to 15 ft X 23000 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 120-KE-8: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [176 ft2 X 10 ft]
- Remove to 15 ft X 176 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 120-KW-6: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [176 ft2 X 10 ft]
- Remove to 15 ft X 176ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 130-K-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [240 ft2 X 6 ft]
- Remove to 15 ft X 240 ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 130-KE-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- MNA on MNA_100K_Updated_4272011.xltm
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 130-KW-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- MNA on MNA_100K_Updated_4272011.xltm
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 130-KW-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- MNA on MNA_100K_Updated_4272011.xltm
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 132-KW-1: Source Type: Building & Stack; FS Group: Post ROD To-Go Site

- Demo 380 square feet building (foundation 15 ft bgs)

Site 1607-K1: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 1607-K2: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 1607-K5: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 1607-K6: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site UPR-100-K-1: Source Type: Unplanned Release Site; FS Group: Post ROD To-Go Site

- Surface barrier at 48,000 ft2 (Capping_100K_4272011.xltm)
- AFTER 75 Years
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Vadose Zone Sites Alternative 3- Removal, treatment, and treatment (RTD) Optimized with Other Technologies:

Site 100-K-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [100 ft2 X 5ft]
- Remove to 15 ft X 100 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-100: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [47,000 ft2 X 12 ft]
- Remove to 15 ft X 47,000 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-101: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [49,750 ft2 X 12 ft]
- Remove to 15 ft X 49,750 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-103: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-104: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [8 ft2 X 15 ft]
- Remove to 15 ft X 8 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-105: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [36 ft2 X 15 ft]
- Remove to 15 ft X 36 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-106: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [400 ft2 X 15 ft]
- Remove to 15 ft X 400 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-107: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [16 ft2 X 15 ft]
- Remove to 15 ft X 16 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-108: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15ft]
- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-13: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [49 ft2 X 6 ft]
- Remove to 15 ft X 49 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-14: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [63 ft2 X 15 ft]
- Remove to 15 ft X 63 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-43: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site (Mobile/Sr-90)

- Institutional Controls for No-digging and No-drill included on Admin_LUC1_100K_4272011.xltm

Site 100-K-47: Source Type: Process Sewer Waste Site; FS Group: Post ROD To-Go Site

- Institutional Controls for No-digging and No-drill included on Admin_LUC1_100K_4272011.xltm

Site 100-K-48: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Land farming on InSituLandFarming_100K_4272011.xltm
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 100-K-49: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Land farming on InSituLandFarming_100K_4272011.xltm
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 100-K-5: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [25 ft2 X 15 ft]
- Remove to 15 ft X 25 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-50: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [175 ft2 X 15 ft]
- Remove to 15 ft X 175 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-54: Source Type: Pipe/Conveyance Site; FS Group Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [4,459 ft2 X 8 ft]
- Remove to 15 ft X 4,459 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-55:2: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [2,870 ft2 X 20.3 ft]
- Remove to 20.3 ft X 2,870 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-56:2: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [2,870 ft2 X 18.3 ft]
- Remove to 18.3 ft X 2,870 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-57: Source Type: Drainage Ditch; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [26,500 ft2 X 5 ft]
- Remove to 15 ft X 26,500 ft2 with treatment at ERDF (Excavation_100Kb_updated3172011.xltm)
- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-60: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Institutional Controls for No-digging and No-drill included on Admin_LUC1_100K_4272011.xltm

Site 100-K-61: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 3,225 square feet building (foundation 40 ft bgs)

Site 100-K-63: Source Type: Unplanned Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [1,044,900 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Kb_updated3172011.xltm)
- Soil Flushing with water
    - Install two 2-acre and one 1-acre drip emitter systems at Site 100-K-64 (BioInfiltration1_100K_4292011.xltm)
    - Install twelve extraction wells for use with drip emitter system (included in GW_ExtractionWells1_100K_4292011.xltm)

  - Install twelve monitoring wells around the drip emitter system (included in GW_MonitoringWells_100K_4292011.xltm)
  - Pipe via above ground pipelines (included in BioInfiltration1_100K4292011.xltm) from equalization tank.
- Groundwater monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-dig and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-64: Source Type: Unplanned Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [900,000 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Kb_updated3172011.xltm)
- Soil Flushing with water
  - Install two 2-acre and one 1-acre drip emitter systems at Site 100-K-64 (BioInfiltration1_100K_4292011.xltm)
  - Install twelve extraction wells for use with drip emitter system (included in GW_ExtractionWells1_100K_4292011.xltm)
  - Install twelve monitoring wells around the drip emitter system (included in GW_MonitoringWells_100K_4292011.xltm)
  - Pipe via above ground pipelines (included in BioInfiltration1_100K_4292011.xltm) from equalization tank.
- Groundwater monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-dig and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-66: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 26,400 square feet building (foundation is 15 ft bgs)

Site 100-K-67: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 26,400 square feet building (foundation is 15 ft bgs)

Site 100-K-72: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Institutional Controls for No-digging and No-drill included on Admin_LUC1_100K_4272011.xltm

Site 100-K-73: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Bio-infiltration

  - Install one 1/2-acre drip emitter system at Site 100-K-73 (BioInfiltration1_100K-4292011.xltm)
  - Install one extraction well for use with drip emitter system (included in GW_ExtractionWells1_100K_4292011.xltm)
  - Install four monitoring wells around the drip emitter system (included in GW_MonitoringWells_100K_4292011.xltm)
  - Pipe via above ground pipelines (included in BioInfiltration1_100K4292011.xltm) from equalization tank.
- Groundwater monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-dig and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-74: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [300 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Soil Flushing with water
  - Install one 1/2-acre drip emitter system at Site 100-K-74 (BioInfiltration1_100K-4292011.xltm)
  - Install one extraction well for use with drip emitter system (included in GW_ExtractionWells1_100K_4292011.xltm)
  - Install four monitoring wells around the drip emitter system (included in GW_MonitoringWells_100K_4292011.xltm)
  - Pipe via above ground pipelines (included in BioInfiltration1_100K4292011.xltm) from equalization tank.
- Groundwater monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-dig and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-75: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Institutional Controls for No-dig and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-79: Source Type: Product Piping Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [570 ft2 X 15 ft]
- Remove to 15 ft X 570 ft2 with treatment at ERDF (Excavation_100Kc_updated4272011.xltm)

- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 100-K-80: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [1,000 ft2 X 8 ft]
- Remove to 15 ft X 1,000 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Leaching Potential Monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-81: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [75 ft2 X 5 ft]
- Remove to 15 ft X 75 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-82: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Surface barrier at 9,520 ft2 (Capping_100K_4272011.xltm)
- AFTER 75 Years
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-83: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-94: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-99: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [47,600 ft2 X 12 ft]
- Remove to 15 ft X 47,600 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 116-K-3: Source Type: Concentrated Dichromate Site; FS Group: Post ROD To-Go Site (Mobile/Cr(VI))

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [400 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Soil Flushing with water

  - Install one 1/2-acre drip emitter system at Site 116-K-3 (BioInfiltration1_100K-4292011.xltm)
  - Install one extraction well for use with drip emitter system (included in GW_ExtractionWells1_100K_4292011.xltm)
  - Install four monitoring wells around the drip emitter system (included in GW_MonitoringWells_100K_4292011.xltm)
  - Pipe via above ground pipelines (included in BioInfiltration1_100K4292011.xltm) from equalization tank.
- Groundwater monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-dig and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 116-KE-1: Source Type: Crib Waste Site; FS Group: Post ROD To-Go Site

- Surface barrier at 4,500 ft2 (Capping_100K_4272011.xltm)
- AFTER 75 Years
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 116-KE-2: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Bio-infiltration
  - Install one 1/2-acre bio-infiltration (drip emitter) system at Site 116-KE-2 (BioInfiltration1_100K_4292011.xltm)
  - Construct one bio-substrate mixing plant (included in BioInfiltration1_100K-4292011.xltm)
  - Install one extraction well for use with bio-infiltration system (included in GW_ExtractionWells1_100K_4292011.xltm)
  - Install four monitoring wells around the bio-infiltration system (included in GW_MonitoringWells_100K_4292011.xltm)
  - Pipe via above ground pipelines (included in BioInfiltration1_100K4292011.xltm) from equalization tank.
- Groundwater monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-dig and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 116-KW-1: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Surface barrier at 4,500 ft2 (Capping_100K_4272011.xltm)

- AFTER 75 Years
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 116-KW-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site (Mobile Cr(VI))

- Bio-infiltration
    - Install one 1/2-acre bio-infiltration (drip emitter) system at Site 116-KW-2 (BioInfiltration1_100K_4292011.xltm)
    - Construct one bio-substrate mixing plant (included in BioInfiltration1_100K-4292011.xltm)
    - Install one extraction well for use with bio-infiltration system (included in GW_ExtractionWells1_100K_4292011.xltm)
    - Install four monitoring wells around the bio-infiltration system (included in GW_MonitoringWells_100K_4292011.xltm)
    - Pipe via above ground pipelines (included in BioInfiltration1_100K4292011.xltm) from equalization tank.
- Groundwater monitoring (MNA_100K_Updated_4272011.xltm)
- Institutional Controls for No-dig and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 120-KE-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [23,000 ft2 X 15 ft]
- Remove to 15 ft X 23,000 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 120-KE-8: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [176 ft2 X 10 ft]
- Remove to 15 ft X 176 ft2 with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 120-KW-6: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [176 ft2 X 10 ft]
- Remove to 15 ft X 176 ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 130-K-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [240 ft2 X 6 ft]
- Remove to 15 ft X 240 ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 130-KE-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Install 2 bioventing wells to 50 feet (Bio Venting_100K_130-KE-2_4292011.doc)
- Install 2 vapor monitor wells (GW_MonitoringWells_100K_4292011.xltm)
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 130-KW-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Install 1 bioventing wells to 16 feet (Bio Venting_100K_130-KW-1_4292011.doc)
- Install 2 vapor monitor wells (GW_MonitoringWells_100K_4292011.xltm)
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 130-KW-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go

- Install 2 bioventing wells 50 feet (Bio Venting_100K_130-KW-2_4292011.doc)
- Install 2 vapor monitor wells (GW_MonitoringWells_100K_4292011.xltm)
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 132-KW-1: Source Type: Building/Stack; FS Group: Post ROD To-Go Site

- Demo 380 square feet building (foundation 15 ft bgs)

Site 1607-K1: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 1607-K2: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 1607-K5: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]

- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 1607-K6: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft X 3,740 ft2 with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site UPR-100-K-1: Source Type: Unplanned Release Site; FS Group: Post ROD To-Go Site

- Surface barrier at 48,000 ft2 (Capping_100K_4272011.xltm)
- AFTER 75 Years
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Vadose Zone Sites Alternative 4- RTD and Focused and Aggressive Groundwater Treatment:

Site 100-K-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal Design sampling is based on the area of contamination included on Appendix J. [100 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-100: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Minimal Design sampling is based on the area of contamination included on Appendix J. [47,000 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-101: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Minimal Design sampling area is based on the area of contamination included on Appendix J. [49,750 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-103: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Minimal Design sampling area is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-104: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal Design sampling area is based on the area of contamination included on Appendix J. [8 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-105: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Minimal Design sampling extent area is based on the area of contamination included on Appendix J. [36 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-106: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal Design sampling area is based on the area of contamination included on Appendix J. [400 ft2 X 32.8 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-107: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Minimal Design sampling is based on the area of contamination included on Appendix J. [16 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-108: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Minimal Design sampling is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-13: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal Design sampling is based on the area of contamination included on Appendix J. [49 ft2 X 15 ft]
- REMOVE to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-14: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal Design sampling area is based on the area of contamination included on Appendix J. [63 ft2 X 15 ft]
- REMOVE to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-43: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site (Mobile/Sr-90)

- Minimal design sampling is based on the area of contamination included on Appendix J. [19,200 ft2 X 65.6 ft]

- REMOVE to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 100-K-47: Source Type: Process Sewer Waste Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [51,570 ft2 X 65.6 ft]
- REMOVE to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 100-K-48: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [900 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 100-K-49: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [400 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 100-K-5: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [25 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-50: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [175 ft2 X 15 ft]
- REMOVE to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-54: Source Type: Pipe/Conveyance Site; FS Group Post Rod To-Go Site (Pipelines)

- Minimal design sampling is based on the area of contamination included on Appendix J. [4,459 ft2 X 15 ft]
- REMOVE to 15 ft with treatment at ERDF (Excavation_100Kc_updated4272011.xltm)

Site 100-K-55:2: Source Type: Pipe/Conveyance Site; FS Group: Pipelines

- Minimal design sampling is based on the area of contamination included on Appendix J. [2,870 ft2 X 65.6 ft]

- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 100-K-56:2: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Minimal Design sampling is based on the area of contamination included on Appendix J. [2,870 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 100-K-57: Source Type: Drainage Ditch Site; FS Group: Post Rod To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [26,500 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 100-K-60: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Minimal design sampling is based on the area of contamination included on Appendix J. [7000 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 100-K-61: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 3,225 square feet building (foundation 40 ft bgs)

Site 100-K-63: Source Type: Unplanned Release; FS Group: Post Rod To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [1,044,900 ft2 X 32.8 ft]
- REMOVE to clean. Assume excavation to 10 m (32.8 ft) (Excavation_100Kc_updated4272011.xltm)

Site 100-K-64: Source Type: Unplanned Release; FS Group: Post Rod To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [900,000 ft2 X 32.8 ft]
- REMOVE to clean. Assume excavation to 10 m (32.8 ft) (Excavation_100Kc_updated4272011.xltm)

Site 100-K-66: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 26,400 square feet building (foundation is 15 ft bgs)

Site 100-K-67: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 26,400 square feet building (foundation is 15 ft bgs)

Site 100-K-72: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Other

- Minimal design sampling is based on the area of contamination included on Appendix J. [250 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Ka_updated4272011.xltm)

Site 100-K-73: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [120 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 100-K-74: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [300 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 100-K-75: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Shallow

- Minimal design sampling is based on the area of contamination included on Appendix J. [250 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Ka_updated4272011.xltm)

Site 100-K-79: Source Type: Product Piping Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [570 ft2 X 15 ft]
- Remove to 15 ft X 570 ft2 with treatment at ERDF (Excavation_100Kc_updated4272011.xltm)

Site 100-K-80: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Minimal design sampling is based on the area of contamination included on Appendix J. [1,000 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 100-K-81: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [75 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 100-K-82: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Surface barrier at 9,520 ft2 (Capping_100K_4272011.xltm)

- AFTER 75 years
- Minimal design sampling is based on the area of contamination included on Appendix J. [9,520 ft2 X 65.6 ft]
- REMOVE to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kb3172011.xltm)

Site 100-K-83: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [7,050 ft2 X 32.8 ft]
- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-94: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Institutional Controls for No-digging and No-irrigation included on Admin_LUC1_100K_4272011.xltm

Site 100-K-99: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [47,600 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 116-K-3: Source Type: Concentrated Dichromate Site; FS Group: Post ROD To-Go Site (Mobile/Cr(VI))

- Minimal design sampling is based on the area of contamination included on Appendix J. [400 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 116-KE-1: Source Type: Crib Waste Site; FS Group: Post ROD To-Go Site

- Surface barrier at 4,500 ft2 (Capping_100K_4272011.xltm)
- AFTER 75 years
- Minimal design sampling is based on the area of contamination included on Appendix J. [4,500 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 116-KE-2: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [225 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 116-KW-1: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Surface barrier at 4,500 ft2 (Capping_100K_4272011.xltm)
- AFTER 75 years
- Minimal design sampling is based on the area of contamination included on Appendix J. [4,500 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 116-KW-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Shallow

- Minimal design sampling is based on the area of contamination included on Appendix J. [375 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kc_updated4272011.xltm)

Site 120-KE-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included on Appendix J. [23,000 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 120-KE-8: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [176 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Ka_updated4272011.xltm)

Site 120-KW-6: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [176 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 130-K-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [240 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 130-KE-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [29,000 ft2 X 50 ft]
- Remove to 50 ft with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 130-KW-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [225 ft2 X 16 ft]
- Remove to 16 ft with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 130-KW-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [29,000 ft2 X 50 ft]
- Remove to 50 ft with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)
- Institutional Controls for No-digging included on Admin_LUC1_100K_4272011.xltm

Site 132-KW-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Demo 380 square feet building (foundation 15 ft bgs)

Site 1607-K1: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 1607-K2: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 1607-K5: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Minimal design sampling is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site 1607-K6: Source Type: Septic Site; FS Group: Post ROD To-Go Site

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- Minimal design sampling is based on the area of contamination included on Appendix J. [3,740 ft2 X 15 ft]
- Remove to 15 ft with treatment at ERDF (Excavation_100Kb_updated4272011.xltm)

Site UPR-100-K-1: Source Type: Unplanned Release Site; FS Group: Post ROD To-Go Site

- Surface barrier at 48,000 ft2 (Capping_100K_4272011.xltm)
- AFTER 75 years
- Minimal design sampling is based on the area of contamination included on Appendix J. [48,000 ft2 X 65.6 ft]
- Remove to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Kb3172011.xltm)

Groundwater Alternative 1- No Action:

The following design is based on Groundwater modeling results from SSPA, as document in ECF-100KR4-11-0062.

- Operate current system at 85% capacity until December 31, 2012.
- NO active treatment from that point forward.

Groundwater Alternative 2- Limited Action:

The following design is based on Groundwater modeling results from SSPA, as document in ECF-100KR4-11-0062.

- Operate current system at 85% capacity until December 31, 2030.

Groundwater Alternative 3- Expanded Pump and Treat with Bio-remediation:

The following design is based on Groundwater modeling results from SSPA, as document in ECF-100KR4-11-0062.

- Install 6 extraction wells (see PRCR_100KR4_Alt3_EWs.docx). The water extracted from the new wells will be treated with ion exchange.
- Pipe via pipelines (included in PRCR_100KR4_Alt3_EWs.docx) to existing treatment facilities.
- Install 1 up-gradient injection well (PRCR_100KR4_Alt3_IWs.docx).
- Pipe via above ground pipelines (included in PRCR_100KR4_Alt3_IWs.docx).
- Convert 7 existing monitor wells to injection/extraction wells.
- Pipe via above ground pipelines (included in PRCR_100KR4_Alt3_IWs.docx).

- Install one 1-acre bio-infiltration (drip emitter) system at the K-East headhouse (PRCR_100KR4_Alt3_BIF_Keast.docx).
- Construct one bio-substrate mixing plant (included in PRCR_100KR4_Alt3_BIF_Keast.docx).
- Pipe via above ground pipelines (included in PRCR_100KR4_Alt3_BIF_Keast.docx) from new bio-substrate mixing plant.
- Upgrade (install) one 1/2-acre bio-infiltration (drip emitter) system at the K-West head house (PRCR_100KR4_Alt3_BIF_Kwest.docx).
- Pipe via above ground pipelines (included in PRCR_100KR4_Alt3_BIF_Kwest.docx) from existing bio-substrate mixing plant.
- Install two Bio-node mixing facilities for bio-substrate injections. (PRCR_100KR4_Alt3_BioNodes.docx).
- Pipe via above ground pipelines (included in PRCR_100KR4_Alt3_BioNodes.docx) from Node to bio-injection wells.
- Install 4 groundwater monitoring wells to a depth of 100 feet.
- Install 2 subgrade bioreactors at K-north plume (see PRCR_100KR4_Alt3_SGBR.docx)
- Operate ion exchange systems at 85% capacity until year 2020 using historical operations unit rate (per gallon).
- Operate subgrade bioreactor systems from 2020 to 2030.

Groundwater Alternative 4- Aggressive Pump and Treat:

The following design is based on Groundwater modeling results from SSPA, as document in ECF-100KR4-11-0062.

- Install 49 extraction wells (see PRCR_100KR4_Alt4_EWs_4292011docx). The water extracted from the new wells will be treated with ion exchange.
- Pipe via pipelines (included in PRCR_100KR4_Alt4_EWs_4292011docx).
- Install 12 injection wells (included in PRCR_100KR4_Atl4_IWs_4292011.docx).
- Pipe via above ground pipelines (included in PRCR_100KR4_Atl4_IWs_4292011.docx).
- Construct new ion exchange treatment system; Capacity of 1,300 GPM required.
- Convert 5 existing monitor wells to injection/extraction wells.
- Pipe via above ground pipelines (included in PRCR_100KR4_Atl4_IWs_4292011.docx).
- Install 8 groundwater monitoring wells to a depth of 100 feet.
- Operate ion exchange systems at 85% capacity until year 2020.

Table 4 shows an example of how information for excavation quantities and input parameters are provided to the estimator for the estimate.

Table 4, Quantity Inputs Example.

Excavation		
Alternative Name/Number	**Alt 2,3&4/100-K-1**	**Alt 2,3&4/100-K-100**
Estimating Method (choose one)		
Length/width/Depth		
Length, ft	10	217
Width, ft	10	217
Depth, ft	15	15
Area/depth		
Area, ac	0	0
Depth, ft	0	0
Depth to Top of Contamination	0	0
Clean overburden above?	No	No
Soil Type	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level	D	D
Manual Product Removal	Yes	Yes
Secondary		
Existing Cover	Soil/Gravel	Soil/Gravel
Replacement Cover	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)	Side Sloping	Side Sloping
If Side Sloping, Rise:Run 1:	1.5	1.5
Source of Additional Fill	None	None
Backfill Hauling Distance, mi		
Dewatering Required	Yes	Yes
Technology Notes:		
Analytical methods will be defined using the Monitoring technology scoping form.		
COCs will be defined in the Waste Site Attribute Table or listed in the Notes on this form.		
Waste disposal (if required) will be defined in the Waste Site Attribute Table or Narrative Alternative Description.		
Confidence Level in Information	Medium	Medium
Notes		

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Comments		
Design Basis Document Name/Description		
Map included in design basis?	Yes	Yes
Cross-Section included?	No	No
Process Flow Diagram included?	No	No
Originator	Brad A. Woodard	Brad A. Woodard
Date	3/17/2011	3/17/2011
Estimator		
Date	12/1/2010	12/1/2010
Excavation Volume Input to RACER		
Calculations for *Length/width/Depth*Inputs Above		
Waste Site Base Area (sf)	100	47,089
Side Slope Run Distance 1 Side (ft)	23	23
Waste Site Ground Surface Length Including Side Slope (ft)	55	262
Waste Site Ground Surface Width Including Side Slope (ft)	55	262
Waste Site Ground Surface Area (sf)	3,025	68,644
Total Volume of Excavation (cy)	998	36,970
Total Volume Contaminated (cy)	64	30,085
Total Volume of Overburden for Reuse (cy)	934	6,886
% of Excavated Material to be Used as Backfill	93.60%	18.62%
Excavation Volume Input to RACER		
Calculations for *Area/depth*Inputs Above		
Waste Site Base Area (sf)	0	0
Waste Site Ground Surface Area (sf)	0	0
Total Volume of Excavation (cy)	0	0
Total Volume Contaminated (cy)	0	0
Total Volume of Overburden for Reuse (cy)	0	0
% of Excavated Material to be Used as Backfill		

5 Exclusions

The following costs have been excluded from the estimate:

- Site preparation such as; access roads, staging areas, and fencing – These costs were excluded from the estimate since it's assumed that the sites have already been prepared for access and are protected with fencing already or will be filled in with no need for fencing.

6 Markups

The following markups have been applied in this cost estimate:

- Subcontractor Profit at 8 percent.
- WA State Sales Tax on Material 8.3 percent.
- Prime Contractors Overhead 10 percent.
- Prime Contractor Profit at 5 percent.
- Contingency. See Section 8 for Percentage variance description.
- Remedial Design. See Section 9 for Percentage variance description.
- Project Management. See Section 9 for Percentage variance description.
- Construction Management. See Section 9 for Percentage variance description.
- PRC general and administrative (G&A) costs applied at a rate of 9.6[1] percent for all PRC labor, material, and equipment and includes the following job-related overhead items. Note: G&A is also applied to fixed-price contractor costs.
  - Project-specific insurance
  - Bonds
  - Permits and licenses
  - General supervision
  - Temporary office personnel
  - Schedules
  - Preparatory work and testing services
  - Temporary project facilities and O&M of these facilities
  - Temporary utilities (e.g. phone, electrical)
  - Project vehicles
  - Personal protective equipment and Occupational Health and Safety requirements
  - Quality controls
  - Mobilization and demobilization
  - Site security

7 Contingencies

Contingency is factored into a cost estimate to cover unknowns, unforeseen circumstances, or unanticipated conditions that are not possible to evaluate from the available data at the time the estimate is prepared. It is used to reduce the risk of possible cost overruns.

The two main types of contingency are scope and bid. Scope contingency covers unknown costs due to scope changes that may occur during design. Bid contingency covers unknown costs associated with constructing and implementing a given project scope. The range for bid contingency is typically from 10 to 20 percent.

- Scope Contingency. Contingency rates have been applied to the capital costs at the various rates presented in EPA/540/R-00/002, Exhibit 5-6. See Table 5.

- Bid Contingency. Rates for this estimate have been applied at 15%.

Table 5, Scope Contingencies

[1] G&A rate is obtained from CH2M Hill Plateau Remediation Company (DRAFT) FY 2011 Rates/Multipliers, effective 10/1/10 \rates\FY11 Rates\FY11 Rates Multipliers.xls

Exhibit 5-6
Example FS-Level Scope Contingency Percentages

Remedial Technology	Scope Contingency (%)
Soil Excavation	15-55
Groundwater Treatment (Multiple)	15-35
On-Site Incineration	15-35
Extraction Wells	10-30
Vertical Barriers	10-30
Synthetic Cap	10-20
Sludge Stabilization	10-20
Off-Site Disposal	5-15
Off-Site Incineration	5-15
Drum Processing	5-15
Bulk Liquid Processing	5-15
Groundwater Treatment (Single)	5-10
Clay Cap	5-10
Surface Grading/Diking	5-10
Revegetation	5-10

8 Project Management, Remedial Design, and Construction Management Costs

Project management, remedial design, and construction management capital costs are estimated using factors presented in EPA/540/R-00/002, Exhibit 5-8. See Table 6.

Table 6, Design and Management Costs

Exhibit 5-8
Example Percentages for Professional/Technical Services Capital Costs

Capital Cost Element	< $100K (%)	$100K-$500K (%)	$500K-$2M (%)	$2M-$10M (%)	> $10M (%)
Project Management	10	8	6	5	5
Remedial Design	20	15	12	8	6
Construction Management	15	10	8	6	6

9 Present Worth

Based on EPA Guidance, EPA/540/R-00/002, *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*, OSWER 9355.0-75 (EPA, 2000), this estimate includes present worth calculations for work performed over time. These costs are presented as present

worth values. The present worth value method establishes a common baseline for evaluating costs that occur during different time periods, thus allowing for direct cost comparisons between different alternatives. The present worth value represents the dollars that would need to be set aside today, at the defined real discount rate, to ensure that funds would be available in the future as they are needed to perform the response action alternative.

Present worth costs were estimated using the real discount rate published in Appendix C of the Office of Management and Budget (OMB) Circular No. A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs, effective through January 2010* (OMB, 2010).

10 Estimate Classification

This estimate was prepared in accordance with the guidelines of "*A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*, EPA 540-R-00-002, OSWER 9355.0-75, July 2000. For the FS stage, the design for the response actions is conceptual, not detailed, and the cost estimate is considered to be "order-of-magnitude." The expected accuracy range of the cost estimate at this stage is approximately plus 50 percent, minus 30 percent..

The expected accuracy range is an indication of the degree to which the final cost outcome for a given project could vary from the estimated cost. Accuracy is traditionally expressed as a +/- percentage range around the point estimate after application of contingency, with a stated level of confidence that the actual cost outcome would fall within this range (+/- measures are a useful simplification, given that actual cost outcomes have different frequency distributions for different types of projects). Typically, this results in a 90% confidence that the actual cost will fall within the bounds of the low and high ranges.

11 Cost Resources

The following resources were used in the development of this cost estimate.

- RACER™
- RS Means cost data
- Estimator Judgment with documented rationale

12 Estimate Methodology

The cost estimate for the 100-K Waste Sites and Groundwater project was developed in accordance with EPA/540/R-00/002, *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*, OSWER 9355.0-75 (EPA, 2000). Microsoft Excel (MS Excel)™ was used to present the cost estimate for each of the removal action alternatives.

RACER™ was used to develop unit costs and lump sum direct costs for the waste site and groundwater remediation alternatives.

™ Microsoft Excel (MS Excel) is a trademark of Microsoft Corporation.

13 Sensitivity Analysis

These cost estimates are based on specific response action scenarios and assumptions. Sensitivity analyses were not performed to quantify the potential impact of changing key parameter assumptions. The following are some key parameters that could result in significant cost deviations from the estimates if their values change significantly from the assumed:

- *Depth and area of excavation*
- *Rate(s) of groundwater extraction and injection*
- *Duration of extraction and injection systems*
- *Duration and actual operations and maintenance requirements for groundwater treatment systems*

14 Labor Costs

Fixed-price (FP) construction craft labor rates are those listed in Appendix A of the Site Stabilization Agreement for All Construction Work for the U.S. Department of Energy at the Hanford Site (commonly known as the Hanford Site Stabilization Agreement [HSSA], 1984). The HSSA rates include base wage, fringe benefits, and other compensation as negotiated between CH2M HILL Plateau Remediation Company (CHPRC) and the National Building and Construction Trades Department American Federation of Labor-Congress of Industrial Organizations (AFL-CIO). Other factors that account for additional costs (Workman's Compensation, Federal Insurance Contributions Act (FICA), and state and Federal unemployment insurance) to develop a fully burdened rate by craft, have been incorporated. The labor rates used are for 2011.

Plateau Remediation Contractor (PRC) labor rates for management, engineering, safety oversight, and technical support are based on the PRC-approved planning rates for fiscal year 2011.

15 References

EPA 540-R-00-002, 2000, *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*, OSWER 9355.0-75, Office of Emergency and Remedial Response, U.S. Environmental Protection Agency, Washington, D.C.

Means, R. S., 2001, ECHOS *Environmental Remediation Cost Date Unit Price*, Robert S. Means Company, Kingston, Massachusetts.

Means, R. S., 2010a, *Building Construction Cost Book*, 68th annual ed., Robert S. Means Company, Kingston, Massachusetts.

Means, R. S., 2010b, *Heavy Construction Cost Data*, 24th annual ed., Robert S. Means Company, Kingston, Massachusetts.

OMB Circular No. A-94, 2010, "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs" (memorandum for Heads of Executive Departments and Establishments), Appendix C, "Discount Rates for Cost-Effectiveness, Lease Purchase, and Related Analyses," as revised, Office of Management and Budget, Washington, D.C.

Site Stabilization Agreement for All Construction Work for the U.S. Department of Energy at the Hanford Site, 1984, as amended, commonly known as the Hanford Site Stabilization Agreement (HSSA)(original title, *Site Stabilization Agreement, Hanford Site, between J.A. Jones Construction Services Company and Morrison-Knudsen Company, Inc., and the Building and Construction Trades Department of the AFL-CIO and its affiliated international unions, and the International Brotherhood of Teamsters, Chauffeurs, Warehousemen, and Helpers of America.*

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Appendix

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Plateau Remediation Company

Environmental Calculation Cover Page

Part 1: Completed by the Responsible Manager

Project: 100-K Cost Estimate Scoping Forms for Feasibility Study Alternative Costing

Date: August 11, 2011

Calculation Title & Description: 100-K Cost Estimate Scoping Forms for Feasibility Study Alternative Costing

Preparer: Kellen Brockman	**Basis of Qualification: Experience and Education**
Checker:	**Basis of Qualification:**
Senior Reviewer:	**Basis of Qualification:**

Part 2: Completed by Preparer

Calculation No.: ECF-100KR4-11-0167

Revision No.: 0

Revision History:

Revision No.	Description	Date	Affected Pages

Part 3: Document Review & Approval:

Preparer:

Kellen Brockman/Project Assistant
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8/11/2011
DATE

Checker:

Jason Hulstrom
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8/18/11
DATE

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3 Methodology **2**

4 Assumptions and Inputs **2**

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6.2 Groundwater Extraction, Injection and Treatment Flow Rates 3

7 Results/Conclusions **3**

8 References **3**

Appendices

A. Well Flow Rate Information for 100-KR-4

Terms

CERCLA	Comprehensive Environmental Compensation and Liability Act of 1980.
CFR	Code of Federal Regulations
COC	Contaminant of Concern
DOE	U.S. Department of Energy
ECF	Environmental Calculation File
ERDF	Environmental Restoration Disposal Facility
ET	Evapo-transpiration
FS	Feasibility Study
IC	Institutional Controls
IRA	Interim Remedial Action
IX	Ion Exchange
MNA	Monitored Natural Attenuation
OU	Operable Unit
O&M	Operation and Maintenance
PP	Proposed Plan
PRG	Preliminary Remediation Goal
RAO	Remedial Action Objective
RTD	Removal, Treatment, and disposal

1 Purpose

The purpose of this calculation is to document and describe cost estimate inputs and key assumptions that support the *Remedial Investigation/Feasibility Study for the 100-KR-1, 100-KR-2, and 100-KR-4 Operable Units (OU)* (DOE/RL-2010-97). The feasibility study (FS) cost inputs are derived from site features, physical parameters, and characteristics of the 100-K source OUs and 100-KR-4 groundwater OU. The FS cost estimates will be prepared to an accuracy of +50%/-30%, and used as part of the detailed and comparative analysis of remedial action alternatives under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, (CERCLA). The cost estimating process will be documented in a separate calculation brief. This analysis ultimately leads to recommendation of a preferred alternative in the proposed plan (PP).

2 Background

This calculation brief supports development of remedial action alternative cost estimates for the identified 100-K source OU waste sites and the 100-KR-4 groundwater OU contaminant plumes (remedial action target area). A range of alternatives was developed in the FS, for each target area based on the type of Preliminary Remediation Goal (PRG) exceeded.

The following remedial action alternatives were developed for consideration in the FS:

Waste Site and Groundwater Alternatives:

Alternative 1—No Action. The NCP (40 CFR 300.430(e)(6)) requires consideration of a No Action Alternative. The No Action Alternative, which serves as a baseline for evaluating other remediation action alternatives, is retained throughout the FS process. No action means that no remediation would be implemented to alter the existing conditions. For this alternative, it has been assumed that all site remedial activities and interim actions (with the possible exception of backfilling any open excavations that are not safe) will be discontinued in December 2012. This includes ceasing operation of the existing KR-4, KW, and KX pump-and-treat systems and any additional monitoring. No conceptual designs or cost estimates are prepared for Alternative 1 because no actions are proposed.

Alternative 2—RTD and Groundwater P&T Optimized with Other Technologies. Alternative 2 uses a strategy of optimizing the risk reduction as well as the cost by using a mixture of RTD with other technologies. The actions will vary, depending on the nature and extent of contamination at the waste site. The actions could include one or more of the following:

- RTD of shallow vadose zone areas. RTD would also include demolition of structures (e.g., buildings) when necessary.
- Biological infiltration
- Soil flushing with treatment of groundwater, if required
- Bioventing or land farming for sites with TPH as a COC
- Temporary surface barriers
- For groundwater, optimization of the pump-and-treat system with biological infiltration and biological injection. Longer term containment will also be used after DWSs are achieved, with treatment of extracted groundwater using subgrade bioreactors.

- Supplemental ICs to mitigate exposure, where potentially required.

Alternative 3 – Focused RTD and Aggressive Groundwater Treatment. Alternative 3 uses a strategy of RTD almost exclusively for waste site contamination to rapidly achieve the RAOs, with the greatest degree of certainty, as well as aggressive pump-and-treat for groundwater. The remedial action will include:

- RTD for waste sites, with excavation until standards are achieved. RTD would also include demolition of structures (e.g., buildings) when necessary.
- Temporary surface barriers
- For Cr(VI) in groundwater, aggressive pump-and-treat.

3 Methodology

Development of the cost inputs for the 100-K OU alternatives generally requires simple calculations performed in Microsoft Excel (MS Excel)™ spreadsheets. Examples of the types of calculations included in this calculation brief include:

- Total number of groundwater samples = Number of groundwater samples per well x number of wells
- Total pipe length (ft) = Average length of pipe run for each extraction and injection well (ft) x number of wells
- Average groundwater extraction or injection rate = flow rate for each well x number of wells
- Nominal flow rate = modeled flow rate x operational uptime (assumed to be 85%)

Due to the basic nature of these calculations, development of a detailed methodology for each calculation is not necessary. Section 4 provides the key inputs and assumptions that support each calculation and section 6 provides a summary of the spreadsheet calculations.

4 Assumptions and Inputs

This section describes the overall assumptions applicable to the 100-K alternatives. Information used in the forms primarily came from Chapters 8, 9, 10 and Appendix J of the FS Report (DOE/RL-2010-97). Additional assumption information was selected from previous 100-K cost estimating found in the Draft Final Environmental Cost Estimate for 100-K Waste Sites and Groundwater (ECE-100-KR411-00005 Rev. 0)

5 Software Applications

Microsoft Office Excel 2007 was used to perform the calculations. Excel is a "Site Licensed Client Software" and is exempt from formal control requirements of PRC-PRO-IRM-309, Controlled Software Management.

™ Microsoft Excel (MS Excel) is a trademark of Microsoft Corporation.

6 Calculation

This section provides calculations for cost estimate inputs for each alternative. The cost estimate calculations are broken down into the following calculation categories:

- Soil and Groundwater Sampling for waste sites
- Groundwater Extraction, Injection and Treatment Rates

Each of these categories is discussed in the following subsections.

6.1 Soil and Groundwater Sampling for waste sites

The following calculations were performed in support of cost estimating for waste site soil and groundwater sampling:

1. Average Sample depth (groundwater): lower range of unconfined aquifer thickness + upper range of unconfined aquifer thickness ÷ 2
2. Average Sample depth (subsurface soil): total contamination depth ÷ 2

6.2 Groundwater Extraction, Injection and Treatment Flow Rates

Groundwater alternatives GW-3 and GW-4 both require calculation of groundwater extraction, injection, and treatment flow rates. Assumptions were made based on modeling information (see Appendix A). To facilitate cost estimating, the following calculations were made:

- Total Annual Volume Extracted = total extraction flow rate (gpm) x 1440 minutes/day x 365 days/yr
- Total Annual Volume Injected= total injection flow rate (gpm) x 1440 minutes/day x 365 days/yr
- Nominal flow rates = flow rate x operational uptime (assumed to be 85%)

7 Results/Conclusions

The cost inputs, assumptions, and calculations presented in the previous sections were used to develop detailed descriptions for each alternative, and document cost estimate assumptions in standard estimating forms to be used by the estimator.

8 References

DOE/RL-2010-97, *Decisional Draft, Remedial Investigation/Feasibility Study for the 100-KR-1, 100-KR-2, and 100-KR-4 Operable Units*. CH2M Hill Plateau Remediation Company, Richland, Washington

ECE-100KR411-00005, Rev.0, *Draft Final*, *Environmental Cost Estimate for 100-K Waste Sites & Groundwater*, CH2M Hill Plateau Remediation Company, Richland, Washington

Attachment A

Well Flow Rate Information for 100-KR-4

VZ Alternative 1- No Action:

- No action for all waste sites

VZ Alternative 2

Site 100-K-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [100 ft2 X 5ft]
- RTD to 15 ft X 100 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-100: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [47,000 ft^2 X 12 ft]
- RTD to 15 ft X 47,000 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-101: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [49,750 ft^2 X 12 ft]
- RTD to 20ft X 49,750 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-103: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [3,740 ft^2 X 15 ft]
- RTD to 15 ft X 3,740 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-104: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [8 ft^2 X 15 ft]
- RTD to 15 ft X 8 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-105: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [36 ft^2 X 15 ft]
- RTD to 15 ft X 36 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-106: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [400 ft2 X 15 ft]
- RTD to 15 ft X 400 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-107: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [16 ft^2 X 15 ft]
- RTD to 15 ft X 16 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-108: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination includedin Appendix J. [3,740 ft^2 X 15ft]
- RTD to 15 ft X 3,740 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-13: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [49 ft^2 X 6 ft]
- RTD to 15 ft X 49 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-14: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [63 ft^2 X 15 ft]
- RTD to 15 ft X 63 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-43: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site (Mobile/Sr-90)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [26,500 ft^2 X 5 ft]
- RTD to 45ft x 19,200ft^2 included on Excavation_100Ka.xlsx

Site 100-K-47: Source Type: Process Sewer Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [51,750 ft2 X 30 ft]
- RTD to 9.1 m (30 ft) (Excavation_100Ka.xlsx)

Site 100-K-48: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Landfarming on InSituLandFarming_100K.xlsx
- Institutional Controls for No-digging included on Admin_LUC1_100K.xlsx

Site 100-K-49: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Landfarming on InSituLandFarming_100K.xlsx
- Institutional Controls for No-digging included on Admin_LUC1_100K.xlsx

Site 100-K-5: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [25 ft^2 X 15 ft]
- RTD to 15 ft X 25 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-50: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [175 ft^2 X 15 ft]
- RTD to 15 ft X 175 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-54: Source Type: Pipe/Conveyance Site; FS Group Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [4,459 ft^2 X 8 ft]
- RTD to 8ft X 4,459 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-55:2: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [2,870 ft^2 X 15 ft]
- RTD to 17 ft X 2,870 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-56:2: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [2,870 ft^2 X 15 ft]
- RTD to 15 ft X 2,870 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-57: Source Type: Drainage Ditch; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [26,500 ft^2 X 5 ft]
- RTD to 15 ft X 26,500 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-60: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [7,000ft^2 X 22 ft]
- RTD to 22 feet included on Excavation_100Ka.xlsx

Site 100-K-61: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 3,225 square feet building (foundation 40 ft bgs) included on Excavation_100Ka.xlsx

Site 100-K-64: Source Type: Unplanned Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [900,000 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-66: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 26,400 square feet building (foundation is 15 ft bgs) included on Excavation_100Ka.xlsx

Site 100-K-67: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 26,400 square feet building (foundation is 15 ft bgs) included on Excavation_100Ka.xlsx

Site 100-K-72: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [250ft^2 X 20 ft]
- RTD to 20 ft (Excavation_100Ka.xlsx)

Site 100-K-73: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [120ft^2 X 45 ft]
- RTD to 45 ft (Excavation_100Ka.xlsx)
- Bioinfiltration to 65 feet
    - Install one 1/2-acre drip emitter system at Site 100-K-73 (BioInfiltration1_100K.xlsx)
    - Install one extraction well for use with drip emitter system (included in GW_ExtractionWells1_100K.xlsx)
    - Install four monitoring wells around the drip emitter system (included in GW_MonitoringWells_100K.xlsx)
    - Pipe via above ground pipelines (included in BioInfiltration1_100K.xlsx) from equalization tank.
- Groundwater monitoring (MNA_100K.xlsx)

Site 100-K-74: Source Type: Structure; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [300 ft2 X 5 ft]
- RTD to 5 ft (Excavation_100Ka.xlsx)

Site 100-K-75: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [250ft^2 X 20ft]
- RTD to 20ft (Excavation_100Ka.xlsx)

Site 100-K-79: Source Type: Product Piping Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [570 ft^2 X 15 ft]
- RTD to 15 ft X 570 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-80: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [1,000 ft^2 X ft]
- RTD to 8ft X 1,000 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-81: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [75 ft^2 X 5 ft]
- RTD to 15 ft X 75 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-82: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Surface barrier at 9,520 ft^2 (Capping_100K.xlsx)
- Institutional Controls for 75 years (and through remediation) on Admin_LUC1_100K.xlsx
- AFTER 75 years
- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [9,520 ft2 X 65.6 ft]
- RTD to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Ka.xlsx)

Site 100-K-83: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [7,050 ft^2 X 15ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-94: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [25 ft^2 X 15ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-99: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [47,600 ft^2 X 12 ft]
- RTD to 15 ft X 47,600 ft^2 (Excavation_100Ka.xlsx)

Site 116-K-3: Source Type: Concentrated Dichromate Site; FS Group: Post ROD To-Go Site (Mobile/Cr(VI))

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [400 ft2 X 15 ft]
- RTD to 15 ft with treatment at ERDF (Excavation_100Ka.xlsx)
- Soil Flushing with water
    - Install one 1/2-acre drip emitter system at Site 116-K-3 (BioInfiltration1_100K.xlsx)
    - Install one extraction well for use with drip emitter system (included in GW_ExtractionWells1_100K.xlsx)
    - Install four monitoring wells around the drip emitter system (included in GW_MonitoringWells_100K.xlsx)
    - Pipe via above ground pipelines (included in BioInfiltration1_100K.xlsx) from equalization tank.
- Groundwater monitoring (MNA_100K.xlsx)

Site 116-KE-1: Source Type: Crib Waste Site; FS Group: Post ROD To-Go Site

- Surface barrier at 4,500 ft^2 (Capping_100K.xlsx)
- AFTER 75 Years
- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [4,500 ft^2 X 50ft]
- RTD to 50 ft (Excavation_100Ka.xlsx)
- Soil Flushing with water
    - Install one 1/2-acre drip emitter system at Site 116-KE-1 (BioInfiltration1_100K.xlsx)
    - Install one extraction well for use with drip emitter system (included in GW_ExtractionWells1_100K.xlsx)

  - Install four monitoring wells around the drip emitter system (included in GW_MonitoringWells_100K.xlsx)
  - Pipe via above ground pipelines (included in BioInfiltration1_100K.xlsx) from equalization tank.
  - Groundwater monitoring (MNA_100K.xlsx)
- Air Stripping included on AirStripper _100K_116_KE_1.xlsx

Site 116-KE-2: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [225 ft^2 X 25ft]
- RTD to 25 ft (Excavation_100Ka.xlsx)
- Bio-infiltration
  - Install one 1/2-acre bio-infiltration (drip emitter) system at Site 116-KE-2 (BioInfiltration1_100K.xlsx)
  - Construct one bio-substrate mixing plant (included in BioInfiltration1_100K.xlsx
  - Install one extraction well for use with bio-infiltration system (included in GW_ExtractionWells1_100K_4292011.xltm)
  - Install four monitoring wells around the bio-infiltration system (included in GW_MonitoringWells_100K.xlsx)
  - Pipe via above ground pipelines (included in BioInfiltration1_100K.xlsx) from equalization tank.
- Groundwater monitoring (MNA_100K.xlsx)
- Institutional Controls for No-dig and No-irrigation included on Admin_LUC1_100K.xlsx

Site 116-KW-1: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Surface barrier at 4,500 ft2 (Capping_100K.xlsx)
- AFTER 75 Years
- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [4,500 ft^2 X 50ft]
- RTD to 55 ft (Excavation_100Ka.xlsx)
- Soil Flushing with water
  - Install one 1/2-acre drip emitter system at Site 116-KW-1 (BioInfiltration1_100K.xlsx)

  - Install one extraction well for use with drip emitter system (included in GW_ExtractionWells1_100K.xlsx)
  - Install four monitoring wells around the drip emitter system (included in GW_MonitoringWells_100K.xlsx)
  - Pipe via above ground pipelines (included in BioInfiltration1_100K.xlsx) from equalization tank.
- Groundwater monitoring (MNA_100K.xlsx)Air Stripping included on AirStripper_100K_116_KW-1.xlsx

Site 116-KW-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site (Mobile Cr(VI))

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [375ft^2 X 15ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

- Bio-infiltration
  - Install one 1/2-acre bio-infiltration (drip emitter) system at Site 116-KW-2 (BioInfiltration1_100K.xlsx)
  - Construct one bio-substrate mixing plant (included in BioInfiltration1_100K.xlsx
  - Install one extraction well for use with bio-infiltration system (included in GW_ExtractionWells1_100K.xlsx)
  - Install four monitoring wells around the bio-infiltration system (included in GW_MonitoringWells_100K.xlsx)
  - Pipe via above ground pipelines (included in BioInfiltration1_100K.xlsx) from equalization tank.
- Groundwater monitoring (MNA_100K.xlsx)
- Institutional Controls for No-dig and No-irrigation included on Admin_LUC1_100K.xlsx

Site 120-KE-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [23,000 ft^2 X 15 ft]
- RTD to 15ft X 23,000 ft^2 (Excavation_100Ka.xlsx)
- Bio-infiltration
  - Install one 1-acre bio-infiltration (drip emitter) system at Site 120-KE-1 (BioInfiltration1_100K.xlsx)

  - Construct one bio-substrate mixing plant (included in BioInfiltration1_100K.xlsx)
  - Install one extraction well for use with bio-infiltration system (included in GW_ExtractionWells1_100K.xlsx)
  - Install four monitoring wells around the bio-infiltration system (included in GW_MonitoringWells_100K.xlsx)
  - Pipe via above ground pipelines (included in BioInfiltration1_100K.xlsx) from equalization tank.
- Institutional Controls for No-dig and No-irrigation included on Admin_LUC1_100K.xlsx

Site 120-KE-8: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [176 ft^2 X 10 ft]
- RTD to 15 ft X 176 ft^2 (Excavation_100Ka.xlsx)

Site 120-KW-6: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [176 ft^2 X 10 ft]
- RTD to 15 ft X 176 ft^2 (Excavation_100Ka.xlsx)

Site 130-K-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [240 ft^2 X 6 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 130-KE-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Install 2 bioventing wells to 50 feet (Bio Venting_100K_130-KE-2.doc)
- Install 2 vapor monitor wells (GW_MonitoringWells_100K.xlsx)
- Institutional Controls for No-digging included on Admin_LUC1_100K.xlsx

Site 130-KW-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [240 ft^2 X 6 ft]
- RTD to 16 ft (Excavation_100Kb_updated4272011.xltm)

Site 130-KW-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go

- Install 2 bioventing wells 50 feet (Bio Venting_100K_130-KW-2.doc)
- Install 2 vapor monitor wells (GW_MonitoringWells_100K.xlsx)
- Institutional Controls for No-digging included on Admin_LUC1_100K.xlsx

Site 132-KW-1: Source Type: Building/Stack; FS Group: Post ROD To-Go Site

- Demo 380 square feet building (foundation 15 ft bgs)

Site 1607-K1: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [3,740 ft^2 X 15ft]
- RTD to 15ft (Excavation_100Ka.xlsx)

Site 1607-K2: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [3,740 ft^2 X 15ft]
- RTD to 15ft (Excavation_100Ka.xlsx)

Site 1607-K5: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [3,740 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 1607-K6: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [3,740 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site UPR-100-K-1: Source Type: Unplanned Release Site; FS Group: Post ROD To-Go Site

- Surface barrier at 48,000 ft^2 (Capping_100K.xlsx)
- AFTER 75 years
- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [48,000 ft^2 X 65.6 ft]
- RTD to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Ka.xlsx)

VZ Alternative 3:-

Site 100-K-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [100 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-100: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [47,000 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-101: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [49,750 ft^2 X 15 ft]
- RTD to 20ft (Excavation_100Ka.xlsx)

Site 100-K-103: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [3,740 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-104: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [8 ft2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-105: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in in Appendix J. [36 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-106: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [400 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-107: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-108: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [3,740 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-13: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [49 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-14: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [63 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-43: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site (Mobile/Sr-90)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [19,200 ft^2 X 65.6 ft]
- RTD to 45 feet (Excavation_100Ka.xlsx)

Site 100-K-47: Source Type: Process Sewer Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [51,750 ft2 X 65.6 ft]
- RTD 9.1 m (30 ft) (Excavation_100Ka.xlsx)

Site 100-K-48: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [900 ft^2 X 3ft]
- RTD to 3 ft (Excavation_100Ka.xlsx)

Site 100-K-49: Source Type: Liquid Spill/Surface Spill Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [400 ft^2 X 3ft]
- RTD to 3ft (Excavation_100Ka.xlsx)

Site 100-K-5: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [25 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-50: Source Type: Septic Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [175 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-54: Source Type: Pipe/Conveyance Site; FS Group Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [4,459 ft^2 X 8ft]
- RTD to 8ft (Excavation_100Ka.xlsx)

Site 100-K-55:2: Source Type: Pipe/Conveyance Site; FS Group: Pipelines

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [2,870 ft^2 X 17 ft]
- RTD to 17 feet (Excavation_100Ka.xlsx)

Site 100-K-56:2: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [2,870 ft^2 X 15 ft]
- RTD to 15 feet (Excavation_100Ka.xlsx)

Site 100-K-57: Source Type: Drainage Ditch Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [26,500 ft^2 X 15 ft]
- RTD to 15 feet (Excavation_100Ka.xlsx)

Site 100-K-60: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in J. [7000 ft^2 X 22 ft]
- RTD to 22 feet (Excavation_100Ka.xlsx)

Site 100-K-61: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 3,225 square feet building (foundation 40 ft bgs) included on Excavation_100Ka.xlsx

Site 100-K-64: Source Type: Unplanned Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [900,000 ft^2 X 15 ft]
- RTD to15 feet (Excavation_100Ka.xlsx)

Site 100-K-66: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 26,400 square feet building (foundation is 15 ft bgs) included on Excavation_100Ka.xlsx

Site 100-K-67: Source Type: Building; FS Group: Post Rod To-Go Site

- Demo 26,400 square feet building (foundation is 15 ft bgs) included on Excavation_100Ka.xlsx

Site 100-K-72: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Other

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [250 ft2 X 20 ft]
- RTD to 20 feet (Excavation_100Ka.xlsx)

Site 100-K-73: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [120 ft2 X 65.6 ft]
- RTD to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Ka.xlsx)

Site 100-K-74: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [300 ft^2 X 5 ft]
- RTD to 5 feet (Excavation_100Ka.xlsx)

Site 100-K-75: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Shallow

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [250 ft^2 X 20 feet]
- RTD to 20 feet (Excavation_100Ka.xlsx)

Site 100-K-79: Source Type: Product Piping Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in the area of contamination included on Appendix J. [570 ft2 X 15 ft]
- RTD to 15 ft X 570 ft^2 (Excavation_100Ka.xlsx)

Site 100-K-80: Source Type: Pipe/Conveyance Site; FS Group: Post Rod To-Go Site (Pipelines)

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [1,000 ft^2 X 8 ft]
- RTD to 8 feet (Excavation_100Ka.xlsx)

Site 100-K-81: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [75 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 100-K-82: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Surface barrier at 9,520 ft^2 (Capping_100K.xlsx)
- Institutional Controls for 75 years (and through remediation) on Admin_LUC1_100K.xlsx

- AFTER 75 years
- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [9,520 ft2 X 65.6 ft]
- RTD to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Ka.xlsx)

Site 100-K-83: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [7,050 ft^2 X 15 ft]
- RTD to 15 feet (Excavation_100Ka.xlsx)

Site 100-K-94: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [25 ft^2 X 15 ft]
- RTD to 15 feet (Excavation_100Ka.xlsx)

Site 100-K-99: Source Type: Liquid Spill/surface Release; FS Group: Post Rod To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [47,600 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 116-K-3: Source Type: Concentrated Dichromate Site; FS Group: Post ROD To-Go Site (Mobile/Cr(VI))

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [400 ft^2 X 55 ft]
- RTD to 55 feet (Excavation_100Ka.xlsx)

Site 116-KE-1: Source Type: Crib Waste Site; FS Group: Post ROD To-Go Site

- Surface barrier at 4,500 ft^2 (Capping_100K_4272011.xltm)
- AFTER 75 years
- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [4,500 ft^2 X 65.6 ft]
- RTD to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Ka.xlsx)
- Air Stripping included on AirStripper _100K_116_KE_1.xlsx

Site 116-KE-2: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [225 ft^2 X 65.6 ft]
- RTD to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Ka.xlsx)

Site 116-KW-1: Source Type: High Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Surface barrier at 4,500 ft^2 (Capping_100K.xlsx)
- AFTER 75 years
- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [4,500 ft^2 X 65.6 ft]
- RTD to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Ka.xlsx)
- Air Stripping included on AirStripper _100K_116_KW_1.xlsx

Site 116-KW-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Shallow

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [375 ft^2 X 65.6 ft]
- RTD to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Ka.xlsx)

Site 120-KE-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [23,000 ft^2 X 85ft]
- RTD to clean. Assume excavation to 26 m (85 ft) (Excavation_100Ka.xlsx)

Site 120-KE-8: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [176 ft^2 X 15 ft]

- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 120-KW-6: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [176 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 130-K-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [240 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 130-KE-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [29,000 ft^2 X 50 ft]
- RTD to 50 ft (Excavation_100Ka.xlsx)

Site 130-KW-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [225 ft^2 X 16 ft]
- RTD to 16 ft (Excavation_100Ka.xlsx)

Site 130-KW-2: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [29,000 ft^2 X 50 ft]
- RTD to 50 ft (Excavation_100Ka.xlsx)

Site 132-KW-1: Source Type: Low Volume Liquid Effluent Waste Site; FS Group: Post ROD To-Go Site

- Demo 380 square feet building (foundation 15 ft bgs) included on Excavation_100Ka.xlsx

Site 1607-K1: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [3,740 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 1607-K2: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [3,740 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 1607-K5: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [3,740 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site 1607-K6: Source Type: Septic Site; FS Group: Post ROD To-Go Site

- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [3,740 ft^2 X 15 ft]
- RTD to 15 ft (Excavation_100Ka.xlsx)

Site UPR-100-K-1: Source Type: Unplanned Release Site; FS Group: Post ROD To-Go Site

- Surface barrier at 48,000 ft^2 (Capping_100K.xlsx)
- AFTER 75 years
- Confirmation/verification sampling to determine nature and extent area is based on the area of contamination included in Appendix J. [48,000 ft^2 X 65.6 ft]
- RTD to clean. Assume excavation to 20 m (65.6 ft) (Excavation_100Ka.xlsx)

Alternative 1- No Action:

- Operate current system at 85% capacity until December 31, 2012.
- NO active treatment from that point forward.

Alternative 2- Expanded Pump and Treat with Bio-remediation:

The following design is based on Groundwater modeling results from SSPA, as document in ECF-100KR4-11-0113. See Figure Alt 3.

- Install 29 extraction wells (100K_GW_ExtractionWells.xlsx). The water extracted from the new wells will be treated with ion exchange (100-K_GW_IonExchange.xlsx).

Install 2 new transfer buildings (900 sq ft) with piping, filters, transfer tank, and transfer pumps.

- Pipe via pipelines (100K_GW_ExtractionWells.xlsx) to new transfer buildings and existing treatment facilities.
- Install 6 upgradient injection well (100K_InjectionWells.xlsx).
- Pipe via above ground pipelines (100K_InjectionWells.xlsx).
- Convert 9 existing monitor wells to injection/extraction wells.
- Install one 1-acre bio-infiltration (drip emitter) system at the K-West headhouse (100K_BioInfiltration.xlsx).
- Construct one bio-substrate mixing plant (100K_BioInfiltration.xlsx).
- Pipe via above ground pipelines (100K_BioInfiltration.xlsx) from new bio-substrate mixing plant.
- Install two Bio-node mixing facilities for bio-substrate injections. (100K_BioNode.xlsx).
- Pipe via above ground pipelines (100K_BioNode.xlsx) from Node to bio-injection wells.
- Install 4 groundwater monitoring wells to a depth of 115 feet. (100K_GW_MonitoringWells.xlsx)
- Operate ion exchange systems at 85% capacity until year 2037. (100-K_GW_IonExchange.xlsx)
- Detailed well flow rate information for ion exchange and bio can be found on 100K_RIFS_WellSummary.xlsx
- Air stripping with vapor phase carbon. Two systems with GAC filter for C-14 removal operating from 2013 to 2020. One 50 gpm (for a single 35 gpm well) and one 100 gpm system (for two 35 gpm wells).

Alternative 3- Aggressive Pump and Treat:

The following design is based on Groundwater modeling results from SSPA, as document in ECF-100KR4-11-0113. See Figure Alt 4.

- Install 53 extraction wells (100K_GW_ExtractionWells.xlsx). The water extracted from the new wells will be treated with ion exchange.
- Pipe via pipelines (100K_GW_ExtractoinWells.xlsx).
- Install 12 injection wells (100K_InjectionWells.xlsx).
- Pipe via above ground pipelines (100K_InjectionWells.xlsx).
- Construct new ion exchange treatment system; Capacity of 1,300 GPM required. (100-K_GW_IonExchange.xlsx)
- Convert 4 existing monitor wells to injection/extraction wells.
- Install 8 groundwater monitoring wells to a depth of 115 feet. (100K_GW_Monitoring Wells.xlsx)
- Operate ion exchange systems at 85% capacity until year 2020. (100-K_GW_IonExchange.xlsx)
- Detailed well flow rate information for ion exchange can be found on 100K_RIFS_WellSummary.xlsx

Administrative Land Use Controls							
Alternative Name	**Alternative 2**	**Alternative 2**	**Alternative 2**	**Alternative 2**	**Alternative 2**	**Alternative 2**	**Alternative 2**
Site Number	**100-K-48**	**100-K-49**	**116-K-3**	**116-KE-2**	**116-KW-2**	**120-KE-1**	**130-KW-2**
System Definition							
Tasks to Include and Start Date							
Planning Documents	No	No	No	No	No	No	No
Start Date							
Implementation	No	No	No	No	No	No	No
Start Date							
Monitoring & Enforcement	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start Date	2012	2012	2012	2012	2012	2012	2012
Modification/Termination	No	No	No	No	No	No	No
Start Date							
Type of Site	Former Government Site	Former Government Site	Former Government Site	Former Government Site	Former Government Site	Former Government Site	Former Government Site
Planning Documents							
Tasks to Include (enter 0 or leave blank if not required)							
Construction Permitting							
Number							
Plan Complexity	Low	Low	Low	Low	Low	Low	Low
Geographic Information System (GIS)/Overlay Maps							
Number	1	1	1	1	1	1	1
Plan Complexity	Low	Low	Low	Low	Low	Low	Low
Planning Meetings							
Construction Permitting							
Number of Meetings							
Number of People							
Number of Days							
GIS/Overlay Maps							
Number of Meetings							
Number of People							
Number of Days							
Implementation							
Tasks to Include							
Deed Notification							
Number							
Task Complexity	Low	Low	Low	Low	Low	Low	Low
Negotiating Easements							
Number							
Task Complexity	Low	Low	Low	Low	Low	Low	Low
Tasks to Include							
Restrictive Covenants							
Number	1	1	1	2	1	1	1
Plan Complexity	Low	Low	Low	Low	Low	Low	Low
Access Control Signs							
Number							
Plan Complexity	Low	Low	Low	Low	Low	Low	Low
Utility Notification Service							
Number							

Alternative Name	Alternative 2	Alternative 2	Alternative 2	Alternative 2	Alternative 2	Alternative 2	Alternative 2
Site Number	100-K-48	100-K-49	116-K-3	116-KE-2	116-KW-2	120-KE-1	130-KW-2
Plan Complexity	Low	Low	Low	Low	Low	Low	Low
GIS/Overlay Maps							
Number	1	1	1	1	1	1	1
Plan Complexity	Low	Low	Low	Low	Low	Low	Low
Monitoring and Enforcement Required							
Duration of Monitoring/Enforcement, years	50	50	50	50	50	50	50
Notice Letters							
Each, yr							
How often							
Reports and Certifications							
Frequency							
Site Visits/Inspections							
Number of Site Visits/Inspections	50	50	50	50	50	50	50
How often	1/year	1/year	1/year	1/year	1/year	1/year	1/year
Expected Safety Level	D	D	D	D	D	D	D
Duration, days	1	1	1	1	1	1	1
Number of People	1	1	1	1	1	1	1
Modify/Termination							
Tasks to Include							
Document Evaluation							
Number							
Plan Complexity	Low	Low	Low	Low	Low	Low	Low
Amend Decision Documents							
Number							
Plan Complexity	Low	Low	Low	Low	Low	Low	Low

Technology Notes:
Assumed that future use is as inactive government facility, therefore municipal interactions or requirements are not included.
Assumed that all staff are local, so no travel expenses are incurred.
Assumed that no LUC documents are required.
Assumed no guard or security services are required in addition to existing security

Confidence Level in Information	High	High	High	High	High	High	High
Notes	No-dig ICs	No-dig ICs	No-dig ICs	No-dig and No-irrigation ICs	No-dig ICs	No-dig ICs	No-dig ICs
Comments							
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman
Date	7/25/2011	7/25/2011	8/12/2011	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator							
Date	12/1/2010	12/1/2010		12/1/2010	12/1/2010	12/1/2010	12/1/2010

Administrative Land Use Controls		
Alternative Name	**Alternative 2**	**Alternative 2 & 3**
Site Number	**130-KE-2**	**100-K-82**
System Definition		
Tasks to Include and Start Date		
Planning Documents	No	No
Start Date		
Implementation	No	No
Start Date		
Monitoring & Enforcement	Yes	Yes
Start Date	2012	2012
Modification/Termination	No	No
Start Date		
Type of Site	Former Government Site	Former Government Site
Planning Documents		
Tasks to Include (enter 0 or leave blank if not required)		
Construction Permitting		
Number		
Plan Complexity	Low	Low
Geographic Information System (GIS)/Overlay Maps		
Number	1	1
Plan Complexity	Low	Low
Planning Meetings		
Construction Permitting		
Number of Meetings		
Number of People		
Number of Days		
GIS/Overlay Maps		
Number of Meetings		
Number of People		
Number of Days		
Implementation		
Tasks to Include		
Deed Notification		
Number		
Task Complexity	Low	Low
Negotiating Easements		
Number		
Task Complexity	Low	Low
Tasks to Include		
Restrictive Covenants		
Number	1	1
Plan Complexity	Low	Low
Access Control Signs		
Number		
Plan Complexity	Low	Low
Utility Notification Service		
Number		

Alternative Name	**Alternative 2**	**Alternative 2 & 3**
Site Number	**130-KE-2**	**100-K-82**
Plan Complexity	Low	Low
GIS/Overlay Maps		
Number	1	1
Plan Complexity	Low	Low
Monitoring and Enforcement Required		
Duration of Monitoring/Enforcement, years	50	75
Notice Letters		
Each, yr		
How often		
Reports and Certifications		
Frequency		
Site Visits/Inspections		
Number of Site Visits/Inspections	50	75
How often	1/year	1/year
Expected Safety Level	D	D
Duration, days	1	1
Number of People	1	1
Modify/Termination		
Tasks to Include		
Document Evaluation		
Number		
Plan Complexity	Low	Low
Amend Decision Documents		
Number		
Plan Complexity	Low	Low
Technology Notes:		
Assumed that future use is as inactive government facility, t		
Assumed that all staff are local, so no travel expenses are in		
Assumed that no LUC documents are required.		
Assumed no guard or security services are required in additi		
Confidence Level in Information	High	High
Notes	No-dig ICs	No-dig, no-irrigation ICs
Comments		IC's should remain in place through remediation, which takes place after 75 years.
Originator	Kellen Brockman	Kellen Brockman
Date	8/1/2011	8/15/2011
Estimator		
Date	12/1/2010	12/1/2010

Bioinfiltration							
Alternative Name/Number	**Alternative 2**	**Alternative 2**	**Alternative 2**	**Alternative 2**	**Alternative 2**	**Alternative 2**	**Alternative 2**
Site Number	**100-K-73**	**116-KE-1**	**116-KE-2**	**116-K-3**	**116-KW-1**	**116-KW-2**	**120-KE-1**
Estimating Method (choose one)							
Length/width							
Length, ft	20	20	20	20	20	20	20
Width, ft	20	20	20	20	20	20	20
Emitter Area, ac	0.5	0.5	0.5	0.5	0.5	0.5	1
Emitter Depth	1	1	1	1	1	1	1
Backfill Material	Rock	Rock	Rock	Rock	Rock	Rock	Rock
Backfill Hauling Distance	20	20	20	20	20	20	20
Dewatering Required	Fixed at "No"	Fixed at "No"	Fixed at "No"		Fixed at "No"	Fixed at "No"	Fixed at "No"
Soil Type							
Expected Safety Level	D	D	D	D	D	D	D
Manual Product Removal							
PIPES & TANKS							
Flow Mechanism	Force Main	Force Main	Force Main	Force Main	Force Main	Force Main	Force Main
Distance from Water source to Emitter system	500	500	500	500	500	500	500
Transfer Piping Diameter (HDPE, in)	4	4	4	4	4	4	4
User Specified size (in)							
Substrate Tank	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Substrate Tank	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Substrate Tank							
Equalization Tank	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic
Equalization Tank	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic	1000 Gallon Horizontal Plastic
Equalization Tank							
Pumps	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping
Pumps	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping	50 GPM, 1.5 hp, Transfer pump with motor, valves, piping
Pumps							
Biofouling Prevention Chemical Feeder							

Technology Notes:
Consider need for acid addition system for system cleaning. Prepare emitter schematic if time allows.

Confidence Level in Information	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Notes		THIS WILL BE A SOIL FLUSHING SYSTEM			THIS WILL BE A SOIL FLUSHING SYSTEM		
Comments							
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman
Date	7/25/2011	8/12/2011	8/12/2011	8/1/2011	7/25/2011	7/25/2011	8/12/2011
Estimator							
Date	12/1/2010	12/1/2010	12/1/2010		12/1/2010	12/1/2010	12/1/2010

Capping				
Alternative Name/Number	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-82**	**116-KE-1**	**116-KW-1**	**UPR-100-K-1**
System Definition				
Cap Type	RCRA D (Non Hazardous Waste)	RCRA D (Non Hazardous Waste)	RCRA D (Non Hazardous Waste)	RCRA D (Non Hazardous Waste)
Dimension (as Area or Length & Width)				
Area, ac				
Length, ft	80	67	80	219
Width, ft	119	67	119	219
Safety Level	C	C	C	C
Side Slope of Cap	30	30	30	30
Horizontal Projection of Side Slope, ft	0	0	0	0
Horizontal Projection of Top Slope, ft	180	180	180	180
RCRA C (Hazardous Waste) Cap				
Surface Layer				
Type	Vegetated Layer	Vegetated Layer	Vegetated Layer	Vegetated Layer
Thickness, inches	30	30	30	30
Borrow Source	On-Site	On-Site	On-Site	On-Site
Protective Layer				
Thickness, inches	30	30	30	30
Borrow Source	On-Site	On-Site	On-Site	On-Site
Drainage Layer				
Impervious Layer	60 Mil HDPE	60 Mil HDPE	60 Mil HDPE	60 Mil HDPE
Soil Cover				
Thickness, inches	30	30	30	30
Borrow Source	On-Site	On-Site	On-Site	On-Site
Foundation Cover				
Thickness, inches	30	30	30	30
Borrow Source	On-Site	On-Site	On-Site	On-Site
Gas Vent System	Yes	Yes	Yes	Yes
Waste Depth, feet	30	30	30	30
RCRA D (Non Hazardous Waste) Cap				
Surface Layer				
Type	Asphalt	Asphalt	Asphalt	Asphalt
Thickness, inches	6	6	6	6
Borrow Source	On-Site	On-Site	On-Site	On-Site
Protective Layer				
Thickness, inches	6	6	6	6
Borrow Source	On-Site	On-Site	On-Site	On-Site
Impervious Layer	60 Mil HDPE	60 Mil HDPE	60 Mil HDPE	60 Mil HDPE
Soil Cover				
Thickness, inches	6	6	6	6
Borrow Source	On-Site	On-Site	On-Site	On-Site

Capping				
Alternative Name/Number	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-82**	**116-KE-1**	**116-KW-1**	**UPR-100-K-1**
Foundation Cover				
Thickness, inches	6	6	6	6
Borrow Source	On-Site	On-Site	On-Site	On-Site
Gas Vent System	No	No	No	No
Waste Depth, feet	30	30	30	30
Evapo-Transpiration Cap				
Vegetative Layer				
Top Cover				
Thickness	30	30	30	30
Borrow Source	On-Site	On-Site	On-Site	On-Site
Clay Loam				
Thickness	30	30	30	30
Borrow Source	On-Site	On-Site	On-Site	On-Site
Foundation Cover				
Thickness, inches	30	30	30	30
Borrow Source	On-Site	On-Site	On-Site	On-Site
Dermal Cap				
Vegetative Layer				
Top Cover				
Thickness	30	30	30	30
Borrow Source	On-Site	On-Site	On-Site	On-Site
Foundation Cover				
Thickness, inches	30	30	30	30
Borrow Source	On-Site	On-Site	On-Site	On-Site
Confidence Level in Information	Medium	Medium	Medium	Medium
Notes				
Comments	Maintain cap for 75 years. After Reactors are decommissioned Alternatives will be performed.	Maintain cap for 75 years. After Reactors are decommissioned Alternatives will be performed.	Maintain cap for 75 years. After Reactors are decommissioned Alternatives will be performed.	Maintain cap for 75 years. After Reactors are decommissioned Alternatives will be performed.
Originator	Brad A. Woodard	Brad A. Woodard	Brad A. Woodard	Brad A. Woodard
Date	4/27/2011	4/27/2011	4/27/2011	4/27/2011
Estimator				
Date	12/1/2010	12/1/2010	12/1/2010	12/1/2010

Excavation					
Alternative Name		**Alternative 2 &3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number		**100-K-1**	**100-K-100**	**100-K-101**	**100-K-103**
Estimating Method (choose one)					
Length/width/Depth					
Length, ft		10	217	0	60
Width, ft		10	217	0	60
Depth, ft		15	15	0	15
Area/depth					
Area, ac		0	0	1.142	0
Depth, ft		0	0	20	0
Depth to Top of Contamination		0	0	0	0
Clean overburden above?		No	No	No	No
Soil Type		Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level		D	D	D	D
Manual Product Removal		Yes	Yes	Yes	Yes
Secondary					
Existing Cover		Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover		Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)		Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run	1:	1.5	1.5	1.5	1.5
Source of Additional Fill		None	None	None	None
Backfill Hauling Distance, mi					
Dewatering Required		Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scoping form.
COCs will be defined in the Waste Site Attribute Table or listed in the Notes on this form.
Waste disposal (if required) will be defined in the Waste Site Attribute Table or Narrative Alternative Description.

Confidence Level in Information	Medium	Medium	Medium	Medium
Notes				
Comments				
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 2 &3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-1**	**100-K-100**	**100-K-101**	**100-K-103**
Date	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator				
Date	12/1/2010	12/1/2010	12/1/2010	12/1/2010
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)	100	47,089	0	3,600
Side Slope Run Distance 1 Side (ft)	23	23	0	23
Waste Site Ground Surface Length Including Side Slope (ft)	55	262	0	105
Waste Site Ground Surface Width Including Side Slope (ft)	55	262	0	105
Waste Site Ground Surface Area (sf)	3,025	68,644	0	11,025
Total Volume of Excavation (cy)	998	36,970	0	4,672
Total Volume Contaminated (cy)	64	30,085	0	2,300
Total Volume of Overburden for Reuse (cy)	934	6,886	0	2,372
% of Excavated Material to be Used as Backfill	93.60%	18.62%		50.77%
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)	0	0	49,746	0
Waste Site Ground Surface Area (sf)	0	0	80,110	0
Total Volume of Excavation (cy)	0	0	55,309	0
Total Volume Contaminated (cy)	0	0	42,376	0
Total Volume of Overburden for Reuse (cy)	0	0	12,933	0
% of Excavated Material to be Used as Backfill			23.38%	
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11

Excavation				
Alternative Name	**Alternative 2 &3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-1**	**100-K-100**	**100-K-101**	**100-K-103**
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-104**	**100-K-105**	**100-K-106**	**100-K-107**
Estimating Method (choose one)				
Length/width/Depth				
Length, ft	2	6	20	4
Width, ft	4	6	20	4
Depth, ft	15	15	15	15
Area/depth				
Area, ac	0	0	0	0
Depth, ft	0	0	0	0
Depth to Top of Contamination	0	0	0	0
Clean overburden above?	No	No	No	No
Soil Type	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level	D	D	D	D
Manual Product Removal	Yes	Yes	Yes	Yes
Secondary				
Existing Cover	Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover	Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)	Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run 1:	1.5	1.5	1.5	1.5
Source of Additional Fill	None	None	None	None
Backfill Hauling Distance, mi				
Dewatering Required	Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Medium	Medium	Medium	Medium
Notes				
Comments				
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-104**	**100-K-105**	**100-K-106**	**100-K-107**
Date	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator				
Date	12/1/2010	12/1/2010	12/1/2010	12/1/2010
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)	8	36	400	16
Side Slope Run Distance 1 Side (ft)	23	23	23	23
Waste Site Ground Surface Length Including Side Slope (ft)	47	51	65	49
Waste Site Ground Surface Width Including Side Slope (ft)	49	51	65	49
Waste Site Ground Surface Area (sf)	2,303	2,601	4,225	2,401
Total Volume of Excavation (cy)	738	842	1,477	772
Total Volume Contaminated (cy)	5	23	256	10
Total Volume of Overburden for Reuse (cy)	733	819	1,222	762
% of Excavated Material to be Used as Backfill	99.31%	97.27%	82.70%	98.68%
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)	0	0	0	0
Waste Site Ground Surface Area (sf)	0	0	0	0
Total Volume of Excavation (cy)	0	0	0	0
Total Volume Contaminated (cy)	0	0	0	0
Total Volume of Overburden for Reuse (cy)	0	0	0	0
% of Excavated Material to be Used as Backfill				
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-104**	**100-K-105**	**100-K-106**	**100-K-107**
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11

Excavation					
Alternative Name		**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number		**100-K-108**	**100-K-13**	**100-K-14**	**100-K-43**
Estimating Method (choose one)					
Length/width/Depth					
Length, ft		44	7	7	
Width, ft		85	7	9	
Depth, ft		15	15	15	
Area/depth					
Area, ac		0	0	0	0.44
Depth, ft		0	0	0	45
Depth to Top of Contamination		0	0	0	0
Clean overburden above?		No	No	Yes	Yes
Soil Type		Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level		D	D	D	D
Manual Product Removal		Yes	Yes	Yes	Yes
Secondary					
Existing Cover		Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover		Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)		Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run	1:	1.5	1.5	1.5	1.5
Source of Additional Fill		None	None	None	None
Backfill Hauling Distance, mi					
Dewatering Required		Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Medium	Medium	Medium	Medium
Notes				
Comments				
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-108**	**100-K-13**	**100-K-14**	**100-K-43**
Date	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator				
Date	12/1/2010	12/1/2010	12/1/2010	
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)	3,740	49	63	
Side Slope Run Distance 1 Side (ft)	23	23	23	
Waste Site Ground Surface Length Including Side Slope (ft)	89	52	52	
Waste Site Ground Surface Width Including Side Slope (ft)	130	52	54	
Waste Site Ground Surface Area (sf)	11,570	2,704	2,808	
Total Volume of Excavation (cy)	4,891	879	917	
Total Volume Contaminated (cy)	2,389	31	40	
Total Volume of Overburden for Reuse (cy)	2,501	848	877	
% of Excavated Material to be Used as Backfill	51.14%	96.44%	95.61%	
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)	0	0	0	
Waste Site Ground Surface Area (sf)	0	0	0	
Total Volume of Excavation (cy)	0	0	0	
Total Volume Contaminated (cy)	0	0	0	
Total Volume of Overburden for Reuse (cy)	0	0	0	
% of Excavated Material to be Used as Backfill				
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-108**	**100-K-13**	**100-K-14**	**100-K-43**
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	

Excavation				
Alternative Name	**Alternative 3**	**Alternative 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-48**	**100-K-49**	**100-K-5**	**100-K-50**
Estimating Method (choose one)				
Length/width/Depth				
Length, ft	30	20	5	2
Width, ft	30	20	5	25
Depth, ft	3	3	15	15
Area/depth				
Area, ac	0	0	0	0
Depth, ft	0	0	0	0
Depth to Top of Contamination	0	0	0	0
Clean overburden above?	No	Yes	No	No
Soil Type	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level	D	D	D	D
Manual Product Removal	Yes	Yes	Yes	Yes
Secondary				
Existing Cover	Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover	Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)	Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run 1:	1.5	1.5	1.5	1.5
Source of Additional Fill	None	None	None	None
Backfill Hauling Distance, mi				
Dewatering Required	Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Medium	Medium	Medium	Medium
Notes				
Comments				
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 3**	**Alternative 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-48**	**100-K-49**	**100-K-5**	**100-K-50**
Date	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator				
Date	12/1/2010	12/1/2010	12/1/2010	12/1/2010
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)	900	400	25	50
Side Slope Run Distance 1 Side (ft)	5	5	23	23
Waste Site Ground Surface Length Including Side Slope (ft)	39	29	50	47
Waste Site Ground Surface Width Including Side Slope (ft)	39	29	50	70
Waste Site Ground Surface Area (sf)	1,521	841	2,500	3,290
Total Volume of Excavation (cy)	155	79	807	1,067
Total Volume Contaminated (cy)	115	51	16	32
Total Volume of Overburden for Reuse (cy)	40	28	791	1,035
% of Excavated Material to be Used as Backfill	25.65%	35.54%	98.02%	97.01%
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)	0	0	0	0
Waste Site Ground Surface Area (sf)	0	0	0	0
Total Volume of Excavation (cy)	0	0	0	0
Total Volume Contaminated (cy)	0	0	0	0
Total Volume of Overburden for Reuse (cy)	0	0	0	0
% of Excavated Material to be Used as Backfill				
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11

Excavation				
Alternative Name	**Alternative 3**	**Alternative 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-48**	**100-K-49**	**100-K-5**	**100-K-50**
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11

Excavation					
Alternative Name		**Alternatives 2 & 3**	**Alternatives 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number		**100-K-54**	**100-K-55:2**	**100-K-56:2**	**100-K-57**
Estimating Method (choose one)					
Length/width/Depth					
Length, ft		65	574	574	
Width, ft		69	5	5	
Depth, ft		8	17	15	
Area/depth					
Area, ac		0	0	0	0.61
Depth, ft		0	0	15	15
Depth to Top of Contamination		0	0	0	0
Clean overburden above?		No	Yes	Yes	Yes
Soil Type		Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level		D	D	D	D
Manual Product Removal		Yes	Yes	Yes	Yes
Secondary					
Existing Cover		Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover		Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)		Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run	1:	1.5	1.5	1.5	1.5
Source of Additional Fill		None	None	None	None
Backfill Hauling Distance, mi					
Dewatering Required		Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Medium	Low	Low	Low
Notes				
Comments				
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternatives 2 & 3**	**Alternatives 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-54**	**100-K-55:2**	**100-K-56:2**	**100-K-57**
Date	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator				
Date	12/1/2010	12/1/2010	12/1/2010	
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)	4,485	2,870	2,870	
Side Slope Run Distance 1 Side (ft)	12	26	23	
Waste Site Ground Surface Length Including Side Slope (ft)	89	625	619	
Waste Site Ground Surface Width Including Side Slope (ft)	93	56	50	
Waste Site Ground Surface Area (sf)	8,277	35,000	30,950	
Total Volume of Excavation (cy)	2,174	13,710	10,804	
Total Volume Contaminated (cy)	1,528	2,078	1,834	
Total Volume of Overburden for Reuse (cy)	646	11,632	8,970	
% of Excavated Material to be Used as Backfill	29.71%	84.84%	83.03%	
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)	0	0	0	
Waste Site Ground Surface Area (sf)	0	0	2,025	
Total Volume of Excavation (cy)	0	0	647	
Total Volume Contaminated (cy)	0	0	0	
Total Volume of Overburden for Reuse (cy)	0	0	647	
% of Excavated Material to be Used as Backfill			100.00%	
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	

Excavation				
Alternative Name	**Alternatives 2 & 3**	**Alternatives 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-54**	**100-K-55:2**	**100-K-56:2**	**100-K-57**
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	

Excavation					
Alternative Name		**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number		**100-K-60**	**100-K-61**	**100-K-64**	**100-K-66**
Estimating Method (choose one)					
Length/width/Depth					
Length, ft					
Width, ft					
Depth, ft					
Area/depth					
Area, ac		0.16	0.8	20.6	6.52
Depth, ft		22	40	15	15
Depth to Top of Contamination		0	0	0	0
Clean overburden above?		Yes	Yes	Yes	Yes
Soil Type		Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level		D	D	D	D
Manual Product Removal		Yes	Yes	Yes	Yes
Secondary					
Existing Cover		Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover		Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)		Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run	1:	1.5	1.5	1.5	1.5
Source of Additional Fill		None	None	None	None
Backfill Hauling Distance, mi					
Dewatering Required		Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Low	Low	Low	Low
Notes				
Comments		Waste site is a structure that will be demolished as part of the RTD alternative		Waste site is a structure that will be demolished as part of the RTD alternative
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation

Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-60**	**100-K-61**	**100-K-64**	**100-K-66**
Date	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator				
Date				

Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)				
Side Slope Run Distance 1 Side (ft)				
Waste Site Ground Surface Length Including Side Slope (ft)				
Waste Site Ground Surface Width Including Side Slope (ft)				
Waste Site Ground Surface Area (sf)				
Total Volume of Excavation (cy)				
Total Volume Contaminated (cy)				
Total Volume of Overburden for Reuse (cy)				
% of Excavated Material to be Used as Backfill				

Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)				
Waste Site Ground Surface Area (sf)				
Total Volume of Excavation (cy)				
Total Volume Contaminated (cy)				
Total Volume of Overburden for Reuse (cy)				
% of Excavated Material to be Used as Backfill				

Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION				
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION				
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION				
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION				
Waste Site Ground Surface Area (sf) - CHECK EQUATION				
Total Volume of Excavation (cy) - CHECK EQUATION				
Total Volume Contaminated (cy) - CHECK EQUATION				
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION				
% of Excavated Material to be Used as Backfill - CHECK EQUATION				

Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION				
Waste Site Ground Surface Area (sf) - CHECK EQUATION				
Total Volume of Excavation (cy) - CHECK EQUATION				

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-60**	**100-K-61**	**100-K-64**	**100-K-66**
Total Volume Contaminated (cy) - CHECK EQUATION				
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION				
% of Excavated Material to be Used as Backfill - CHECK EQUATION				

Excavation					
Alternative Name		**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2**	**Alternative 3**
Site Number		**100-K-67**	**100-K-72**	**100-K-73**	**100-K-73**
Estimating Method (choose one)					
Length/width/Depth					
Length, ft				15	
Width, ft				15	
Depth, ft				20	
Area/depth					
Area, ac		6.52	0	0.003	0.003
Depth, ft		15	0	45	65
Depth to Top of Contamination		0	0	0	0
Clean overburden above?		Yes	No	No	No
Soil Type		Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level		D	D	D	D
Manual Product Removal		Yes	Yes	Yes	Yes
Secondary					
Existing Cover		Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover		Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)		Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run	1:	1.5	1.5	1.5	1.5
Source of Additional Fill		None	None	None	None
Backfill Hauling Distance, mi					
Dewatering Required		Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Low	Medium	Medium	Medium
Notes				
Comments	Waste site is a structure that will be demolished as part of the RTD alternative			
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2**	**Alternative 3**
Site Number	**100-K-67**	**100-K-72**	**100-K-73**	**100-K-73**
Date	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator				
Date		12/1/2010		

Excavation Volume Input to RACER	
Calculations for *Length/width/Depth* Inputs Above	
Waste Site Base Area (sf)	225
Side Slope Run Distance 1 Side (ft)	30
Waste Site Ground Surface Length Including Side Slope (ft)	75
Waste Site Ground Surface Width Including Side Slope (ft)	75
Waste Site Ground Surface Area (sf)	5,625
Total Volume of Excavation (cy)	2,492
Total Volume Contaminated (cy)	192
Total Volume of Overburden for Reuse (cy)	2,300
% of Excavated Material to be Used as Backfill	92.31%

Excavation Volume Input to RACER	
Calculations for *Area/depth* Inputs Above	
Waste Site Base Area (sf)	0
Waste Site Ground Surface Area (sf)	0
Total Volume of Excavation (cy)	0
Total Volume Contaminated (cy)	0
Total Volume of Overburden for Reuse (cy)	0
% of Excavated Material to be Used as Backfill	

Excavation Volume Input to RACER	
Calculations for *Length/width/Depth* Inputs Above	
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11

Excavation Volume Input to RACER	
Calculations for *Area/depth* Inputs Above	
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2**	**Alternative 3**
Site Number	**100-K-67**	**100-K-72**	**100-K-73**	**100-K-73**
Total Volume Contaminated (cy) - CHECK EQUATION		BPO-1-26-11		
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION		BPO-1-26-11		
% of Excavated Material to be Used as Backfill - CHECK EQUATION		BPO-1-26-11		

Excavation					
Alternative Name		**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number		**100-K-74**	**100-K-75**	**100-K-79**	**100-K-80**
Estimating Method (choose one)					
Length/width/Depth					
Length, ft		15	10		10
Width, ft		15	25		100
Depth, ft		5	20		8
Area/depth					
Area, ac		0	0	0.013	0
Depth, ft		0	0	15	0
Depth to Top of Contamination		0	0	0	0
Clean overburden above?		No	No	No	No
Soil Type		Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level		D	D	D	D
Manual Product Removal		Yes	Yes	Yes	Yes
Secondary					
Existing Cover		Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover		Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)		Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run	1:	1.5	1.5	1.5	1.5
Source of Additional Fill		None	None	None	None
Backfill Hauling Distance, mi					
Dewatering Required		Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Medium	Medium	Medium	Low
Notes				
Comments				
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-74**	**100-K-75**	**100-K-79**	**100-K-80**
Date	7/25/2011	7/25/2011	7/25/2011	8/12/2011
Estimator				
Date	12/1/2010	12/1/2010		12/1/2010
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)	225	250		1,000
Side Slope Run Distance 1 Side (ft)	8	30		12
Waste Site Ground Surface Length Including Side Slope (ft)	30	70		34
Waste Site Ground Surface Width Including Side Slope (ft)	30	85		124
Waste Site Ground Surface Area (sf)	900	5,950		4,216
Total Volume of Excavation (cy)	120	2,641		889
Total Volume Contaminated (cy)	48	213		
Total Volume of Overburden for Reuse (cy)	72	2,428		548
% of Excavated Material to be Used as Backfill	60.00%	91.94%		61.66%
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)	0	0		0
Waste Site Ground Surface Area (sf)	0	0		0
Total Volume of Excavation (cy)	0	0		0
Total Volume Contaminated (cy)	0	0		
Total Volume of Overburden for Reuse (cy)	0	0		0
% of Excavated Material to be Used as Backfill				
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-74**	**100-K-75**	**100-K-79**	**100-K-80**
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		BPO-1-26-11

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 &3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-81**	**100-K-82**	**100-K-83**	**100-K-94**
Estimating Method (choose one)				
Length/width/Depth				
Length, ft	15	80		
Width, ft	5	119		
Depth, ft	15	65		
Area/depth				
Area, ac	0	0	0.16	0.0006
Depth, ft	0	0	15	15
Depth to Top of Contamination	0	0	0	0
Clean overburden above?	No	No	No	No
Soil Type	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level	D	D	D	D
Manual Product Removal	Yes	Yes	Yes	Yes
Secondary				
Existing Cover	Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover	Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)	Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run 1:	1.5	1.5	1.5	1.5
Source of Additional Fill	None	None	None	None
Backfill Hauling Distance, mi				
Dewatering Required	Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Low	Low	Low	Low
Notes				
Comments				
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 &3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-81**	**100-K-82**	**100-K-83**	**100-K-94**
Date	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator				
Date	12/1/2010	12/1/2010		
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)	75	9,520		
Side Slope Run Distance 1 Side (ft)	23	98		
Waste Site Ground Surface Length Including Side Slope (ft)	60	275		
Waste Site Ground Surface Width Including Side Slope (ft)	50	314		
Waste Site Ground Surface Area (sf)	3,000	86,350		
Total Volume of Excavation (cy)	982	132,709		
Total Volume Contaminated (cy)	48	26,356		
Total Volume of Overburden for Reuse (cy)	934	106,353		
% of Excavated Material to be Used as Backfill	95.12%	80.14%		
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)	0	0		
Waste Site Ground Surface Area (sf)	0	0		
Total Volume of Excavation (cy)	0	0		
Total Volume Contaminated (cy)	0	0		
Total Volume of Overburden for Reuse (cy)	0	0		
% of Excavated Material to be Used as Backfill				
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 &3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**100-K-81**	**100-K-82**	**100-K-83**	**100-K-94**
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		

Excavation					
Alternative Name		**Alternative 2 & 3**	**Alternative 2**	**Alternative 3**	**Alternative 2**
Site Number		**100-K-99**	**116-K-3**	**116-K-3**	**116-KE-1**
Estimating Method (choose one)					
Length/width/Depth					
Length, ft		0	20	20	
Width, ft		0	20	20	
Depth, ft		0	15	55	
Area/depth					
Area, ac		1.09	0	0	0.006
Depth, ft		15	0	0	50
Depth to Top of Contamination		0	0	0	0
Clean overburden above?		No	No	No	No
Soil Type		Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level		D	D	D	D
Manual Product Removal		Yes	Yes	Yes	Yes
Secondary					
Existing Cover		Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover		Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)		Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run	1:	1.5	1.5	1.5	1.5
Source of Additional Fill		None	None	None	None
Backfill Hauling Distance, mi					
Dewatering Required		Yes	Yes	Yes	Yes
Technology Notes:					
Analytical methods will be defined using the Monitoring technology scopi					
COCs will be defined in the Waste Site Attribute Table or listed in the Not					
Waste disposal (if required) will be defined in the Waste Site Attribute Ta					
Confidence Level in Information		Low	Medium	Medium	Medium
Notes					
Comments					
Design Basis Document Name/Description					
Map included in design basis?		Yes	Yes	Yes	Yes
Cross-Section included?		No	No	No	No
Process Flow Diagram included?		No	No	No	No
Originator		Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2**	**Alternative 3**	**Alternative 2**
Site Number	**100-K-99**	**116-K-3**	**116-K-3**	**116-KE-1**
Date	7/25/2011	7/25/2011	7/25/2011	8/12/2011
Estimator				
Date	12/1/2010	12/1/2010	12/1/2010	
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)	0	400		
Side Slope Run Distance 1 Side (ft)	0	23		
Waste Site Ground Surface Length Including Side Slope (ft)	0	65		
Waste Site Ground Surface Width Including Side Slope (ft)	0	65		
Waste Site Ground Surface Area (sf)	0	4,225		
Total Volume of Excavation (cy)	0	1,477		
Total Volume Contaminated (cy)	0	256		
Total Volume of Overburden for Reuse (cy)	0	1,222		
% of Excavated Material to be Used as Backfill		82.70%		
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)	47,480	0		
Waste Site Ground Surface Area (sf)	69,116	0		
Total Volume of Excavation (cy)	37,246	0		
Total Volume Contaminated (cy)	30,335	0		
Total Volume of Overburden for Reuse (cy)	6,911	0		
% of Excavated Material to be Used as Backfill	18.56%			
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2**	**Alternative 3**	**Alternative 2**
Site Number	**100-K-99**	**116-K-3**	**116-K-3**	**116-KE-1**
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11		

Excavation				
Alternative Name	**Alternative 3**	**Alternative 2**	**Alternative 3**	**Alternative 2**
Site Number	**116-KE-1**	**116-KE-2**	**116-KE-2**	**116-KW-1**
Estimating Method (choose one)				
Length/width/Depth				
Length, ft				
Width, ft				
Depth, ft				
Area/depth				
Area, ac	0.006	0.06	0.06	0.103
Depth, ft	65	25	65	55
Depth to Top of Contamination	0	0	0	0
Clean overburden above?	No	No	No	No
Soil Type	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level	D	D	D	D
Manual Product Removal	Yes	Yes	Yes	Yes
Secondary				
Existing Cover	Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover	Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)	Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run 1:	1.5	1.5	1.5	1.5
Source of Additional Fill	None	None	None	None
Backfill Hauling Distance, mi				
Dewatering Required	Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Medium	Medium	Medium	Medium
Notes				
Comments				
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 3**	**Alternative 2**	**Alternative 3**	**Alternative 2**
Site Number	**116-KE-1**	**116-KE-2**	**116-KE-2**	**116-KW-1**
Date	7/25/2011	8/12/2011	7/25/2011	7/25/2011
Estimator				
Date				

Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)				
Side Slope Run Distance 1 Side (ft)				
Waste Site Ground Surface Length Including Side Slope (ft)				
Waste Site Ground Surface Width Including Side Slope (ft)				
Waste Site Ground Surface Area (sf)				
Total Volume of Excavation (cy)				
Total Volume Contaminated (cy)				
Total Volume of Overburden for Reuse (cy)				
% of Excavated Material to be Used as Backfill				

Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)				
Waste Site Ground Surface Area (sf)				
Total Volume of Excavation (cy)				
Total Volume Contaminated (cy)				
Total Volume of Overburden for Reuse (cy)				
% of Excavated Material to be Used as Backfill				

Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION				
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION				
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION				
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION				
Waste Site Ground Surface Area (sf) - CHECK EQUATION				
Total Volume of Excavation (cy) - CHECK EQUATION				
Total Volume Contaminated (cy) - CHECK EQUATION				
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION				
% of Excavated Material to be Used as Backfill - CHECK EQUATION				

Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION				
Waste Site Ground Surface Area (sf) - CHECK EQUATION				
Total Volume of Excavation (cy) - CHECK EQUATION				

Excavation				
Alternative Name	Alternative 3	Alternative 2	Alternative 3	Alternative 2
Site Number	116-KE-1	116-KE-2	116-KE-2	116-KW-1
Total Volume Contaminated (cy) - CHECK EQUATION				
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION				
% of Excavated Material to be Used as Backfill - CHECK EQUATION				

Excavation					
Alternative Name		**Alternative 3**	**Alternative 2**	**Alternative 3**	**Alternative 2**
Site Number		**116-KW-1**	**116-KW-2**	**116-KW-2**	**120-KE-1**
Estimating Method (choose one)					
Length/width/Depth					
Length, ft					0
Width, ft					0
Depth, ft					0
Area/depth					
Area, ac		0.103	0.009	0.009	0.528007
Depth, ft		65	15	65	15
Depth to Top of Contamination		0	0	0	0
Clean overburden above?		No	No	No	No
Soil Type		Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level		D	D	D	D
Manual Product Removal		Yes	Yes	Yes	Yes
Secondary					
Existing Cover		Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover		Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)		Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run	1:	1.5	1.5	1.5	1.5
Source of Additional Fill		None	None	None	None
Backfill Hauling Distance, mi					
Dewatering Required		Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Medium	Medium	Medium	Medium
Notes				
Comments				
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 3**	**Alternative 2**	**Alternative 3**	**Alternative 2**
Site Number	**116-KW-1**	**116-KW-2**	**116-KW-2**	**120-KE-1**
Date	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator				
Date				12/1/2010

Excavation Volume Input to RACER	
Calculations for *Length/width/Depth* Inputs Above	
Waste Site Base Area (sf)	0
Side Slope Run Distance 1 Side (ft)	0
Waste Site Ground Surface Length Including Side Slope (ft)	0
Waste Site Ground Surface Width Including Side Slope (ft)	0
Waste Site Ground Surface Area (sf)	0
Total Volume of Excavation (cy)	0
Total Volume Contaminated (cy)	0
Total Volume of Overburden for Reuse (cy)	0
% of Excavated Material to be Used as Backfill	

Excavation Volume Input to RACER	
Calculations for *Area/depth* Inputs Above	
Waste Site Base Area (sf)	23,000
Waste Site Ground Surface Area (sf)	38,674
Total Volume of Excavation (cy)	19,701
Total Volume Contaminated (cy)	14,694
Total Volume of Overburden for Reuse (cy)	5,007
% of Excavated Material to be Used as Backfill	25.41%

Excavation Volume Input to RACER	
Calculations for *Length/width/Depth* Inputs Above	
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11

Excavation Volume Input to RACER	
Calculations for *Area/depth* Inputs Above	
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11

Excavation				
Alternative Name	**Alternative 3**	**Alternative 2**	**Alternative 3**	**Alternative 2**
Site Number	**116-KW-1**	**116-KW-2**	**116-KW-2**	**120-KE-1**
Total Volume Contaminated (cy) - CHECK EQUATION				BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION				BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION				BPO-1-26-11

Excavation					
Alternative Name		**Alternative 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number		**120-KE-1**	**120-KE-8**	**120-KW-6**	**130-K-2**
Estimating Method (choose one)					
Length/width/Depth					
Length, ft			8		
Width, ft			22		
Depth, ft			15		
Area/depth					
Area, ac		0.528007	0	0.004	0.006
Depth, ft		85	0	15	15
Depth to Top of Contamination		0	0	0	0
Clean overburden above?		No	No	No	No
Soil Type		Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level		D	D	D	D
Manual Product Removal		Yes	Yes	Yes	Yes
Secondary					
Existing Cover		Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover		Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)		Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run	1:	1.5	1.5	1.5	1.5
Source of Additional Fill		None	None	None	None
Backfill Hauling Distance, mi					
Dewatering Required		Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Medium	Medium	Medium	Medium
Notes				
Comments				
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation					
Alternative Name	**Alternative 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	
Site Number	**120-KE-1**	**120-KE-8**	**120-KW-6**	**130-K-2**	
Date	7/25/2011	7/25/2011	7/25/2011	8/1/2011	
Estimator					
Date		12/1/2010	12/1/2010		
Excavation Volume Input to RACER					
Calculations for *Length/width/Depth* Inputs Above					
Waste Site Base Area (sf)		176	0		
Side Slope Run Distance 1 Side (ft)		23	0		
Waste Site Ground Surface Length Including Side Slope (ft)		53	0		
Waste Site Ground Surface Width Including Side Slope (ft)		67	0		
Waste Site Ground Surface Area (sf)		3,551	0		
Total Volume of Excavation (cy)		1,191	0		
Total Volume Contaminated (cy)		112	0		
Total Volume of Overburden for Reuse (cy)		1,078	0		
% of Excavated Material to be Used as Backfill		90.56%			
Excavation Volume Input to RACER					
Calculations for *Area/depth* Inputs Above					
Waste Site Base Area (sf)		0	174		
Waste Site Ground Surface Area (sf)		0	3,387		
Total Volume of Excavation (cy)		0	1,138		
Total Volume Contaminated (cy)		0	111		
Total Volume of Overburden for Reuse (cy)		0	1,026		
% of Excavated Material to be Used as Backfill			90.22%		
Excavation Volume Input to RACER					
Calculations for *Length/width/Depth* Inputs Above					
Waste Site Base Area (sf) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Area (sf) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		
Total Volume of Excavation (cy) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		
Total Volume Contaminated (cy) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		
% of Excavated Material to be Used as Backfill - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		
Excavation Volume Input to RACER					
Calculations for *Area/depth* Inputs Above					
Waste Site Base Area (sf) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		
Waste Site Ground Surface Area (sf) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		
Total Volume of Excavation (cy) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11		

Excavation				
Alternative Name	**Alternative 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**120-KE-1**	**120-KE-8**	**120-KW-6**	**130-K-2**
Total Volume Contaminated (cy) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11	
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11	
% of Excavated Material to be Used as Backfill - CHECK EQUATION		BPO-1-26-11	BPO-1-26-11	

Excavation				
Alternative Name	**Alternative 3**	**Alternative 2 & 3**	**Alternative 3**	**Alternative 2 & 3**
Site Number	**130-KE-2**	**130-KW-1**	**130-KW-2**	**132-KW-1**
Estimating Method (choose one)				
Length/width/Depth				
Length, ft				
Width, ft				
Depth, ft				
Area/depth				
Area, ac	0.006	0.005	0.67	0.009
Depth, ft	50	16	50	15
Depth to Top of Contamination	0	0	0	0
Clean overburden above?	No	No	No	No
Soil Type	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level	D	D	D	D
Manual Product Removal	Yes	Yes	Yes	Yes
Secondary				
Existing Cover	Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover	Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)	Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run 1:	1.5	1.5	1.5	1.5
Source of Additional Fill	None	None	None	None
Backfill Hauling Distance, mi				
Dewatering Required	Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Medium	Medium	Medium	Medium
Notes				
Comments				Waste site is a building that will be demolished as part of RTD
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 3**	**Alternative 2 & 3**	**Alternative 3**	**Alternative 2 & 3**
Site Number	**130-KE-2**	**130-KW-1**	**130-KW-2**	**132-KW-1**
Date	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator				
Date	12/1/2010	12/1/2010	12/1/2010	12/1/2010
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)	0	0	0	0
Side Slope Run Distance 1 Side (ft)	0	0	0	0
Waste Site Ground Surface Length Including Side Slope (ft)	0	0	0	0
Waste Site Ground Surface Width Including Side Slope (ft)	0	0	0	0
Waste Site Ground Surface Area (sf)	0	0	0	0
Total Volume of Excavation (cy)	0	0	0	0
Total Volume Contaminated (cy)	0	0	0	0
Total Volume of Overburden for Reuse (cy)	0	0	0	0
% of Excavated Material to be Used as Backfill				
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)	261	218	29,185	392
Waste Site Ground Surface Area (sf)	27,611	3,939	102,936	4,199
Total Volume of Excavation (cy)	29,679	1,416	140,685	1,467
Total Volume Contaminated (cy)	557	148	62,154	250
Total Volume of Overburden for Reuse (cy)	29,123	1,268	78,531	1,216
% of Excavated Material to be Used as Backfill	98.12%	89.52%	55.82%	82.92%
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11

Excavation				
Alternative Name	**Alternative 3**	**Alternative 2 & 3**	**Alternative 3**	**Alternative 2 & 3**
Site Number	**130-KE-2**	**130-KW-1**	**130-KW-2**	**132-KW-1**
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11

Excavation					
Alternative Name		**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number		**1607-K1**	**1607-K2**	**1607-K5**	**1607-K6**
Estimating Method (choose one)					
Length/width/Depth					
Length, ft					
Width, ft					
Depth, ft					
Area/depth					
Area, ac		0.09	0.09	0.09	0.09
Depth, ft		15	15	15	15
Depth to Top of Contamination		0	0	0	0
Clean overburden above?		No	No	No	No
Soil Type		Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level		D	D	D	D
Manual Product Removal		Yes	Yes	Yes	Yes
Secondary					
Existing Cover		Soil/Gravel	Soil/Gravel	Soil/Gravel	Soil/Gravel
Replacement Cover		Soil/Stone	Soil/Stone	Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)		Side Sloping	Side Sloping	Side Sloping	Side Sloping
If Side Sloping, Rise:Run	1:	1.5	1.5	1.5	1.5
Source of Additional Fill		None	None	None	None
Backfill Hauling Distance, mi					
Dewatering Required		Yes	Yes	Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Medium	Medium	Medium	Medium
Notes				
Comments				
Design Basis Document Name/Description				
Map included in design basis?	Yes	Yes	Yes	Yes
Cross-Section included?	No	No	No	No
Process Flow Diagram included?	No	No	No	No
Originator	Kellen Brockman	Kellen Brockman	Kellen Brockman	Kellen Brockman

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**1607-K1**	**1607-K2**	**1607-K5**	**1607-K6**
Date	7/25/2011	7/25/2011	7/25/2011	7/25/2011
Estimator				
Date	12/1/2010	12/1/2010	12/1/2010	12/1/2010
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf)	0	0	0	0
Side Slope Run Distance 1 Side (ft)	0	0	0	0
Waste Site Ground Surface Length Including Side Slope (ft)	0	0	0	0
Waste Site Ground Surface Width Including Side Slope (ft)	0	0	0	0
Waste Site Ground Surface Area (sf)	0	0	0	0
Total Volume of Excavation (cy)	0	0	0	0
Total Volume Contaminated (cy)	0	0	0	0
Total Volume of Overburden for Reuse (cy)	0	0	0	0
% of Excavated Material to be Used as Backfill				
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf)	3,920	3,920	3,920	3,920
Waste Site Ground Surface Area (sf)	11,581	11,581	11,581	11,581
Total Volume of Excavation (cy)	4,952	4,952	4,952	4,952
Total Volume Contaminated (cy)	2,505	2,505	2,505	2,505
Total Volume of Overburden for Reuse (cy)	2,447	2,447	2,447	2,447
% of Excavated Material to be Used as Backfill	49.42%	49.42%	49.42%	49.42%
Excavation Volume Input to RACER				
Calculations for *Length/width/Depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Excavation Volume Input to RACER				
Calculations for *Area/depth* Inputs Above				
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11

Excavation				
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**1607-K1**	**1607-K2**	**1607-K5**	**1607-K6**
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11	BPO-1-26-11

Excavation			
Alternative Name		**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number		**UPR-100-K-1**	**100-K-47**
Estimating Method (choose one)			
Length/width/Depth			
Length, ft			
Width, ft			
Depth, ft			
Area/depth			
Area, ac		11.9	1.19
Depth, ft		65	30
Depth to Top of Contamination		0	0
Clean overburden above?		No	No
Soil Type		Gravel Sand Mixture	Gravel Sand Mixture
Expected Safety Level		D	D
Manual Product Removal		Yes	Yes
Secondary			
Existing Cover		Soil/Gravel	Soil/Gravel
Replacement Cover		Soil/Stone	Soil/Stone
Sidewall Protection (any excavation > 5 ft deep)		Side Sloping	Side Sloping
If Side Sloping, Rise:Run	1:	1.5	1.5
Source of Additional Fill		None	None
Backfill Hauling Distance, mi			
Dewatering Required		Yes	Yes

Technology Notes:
Analytical methods will be defined using the Monitoring technology scopi
COCs will be defined in the Waste Site Attribute Table or listed in the Not
Waste disposal (if required) will be defined in the Waste Site Attribute Ta

Confidence Level in Information	Medium	Medium
Notes		
Comments		
Design Basis Document Name/Description		
Map included in design basis?	Yes	Yes
Cross-Section included?	No	No
Process Flow Diagram included?	No	No
Originator	Kellen Brockman	Kellen Brockman

Excavation		
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**UPR-100-K-1**	**100-K-47**
Date	7/25/2011	8/12/2011
Estimator		
Date	12/1/2010	12/1/2010

Excavation Volume Input to RACER		
Calculations for *Length/width/Depth* Inputs Above		
Waste Site Base Area (sf)	0	0
Side Slope Run Distance 1 Side (ft)	0	0
Waste Site Ground Surface Length Including Side Slope (ft)	0	0
Waste Site Ground Surface Width Including Side Slope (ft)	0	0
Waste Site Ground Surface Area (sf)	0	0
Total Volume of Excavation (cy)	0	0
Total Volume Contaminated (cy)	0	
Total Volume of Overburden for Reuse (cy)	0	0
% of Excavated Material to be Used as Backfill		

Excavation Volume Input to RACER		
Calculations for *Area/depth* Inputs Above		
Waste Site Base Area (sf)	518,364	51,836
Waste Site Ground Surface Area (sf)	837,179	100,918
Total Volume of Excavation (cy)	1,876,423	97,593
Total Volume Contaminated (cy)	1,435,100	
Total Volume of Overburden for Reuse (cy)	441,323	31,358
% of Excavated Material to be Used as Backfill	23.52%	32.13%

Excavation Volume Input to RACER		
Calculations for *Length/width/Depth* Inputs Above		
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
Side Slope Run Distance 1 Side (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Length Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Width Including Side Slope (ft) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11

Excavation Volume Input to RACER		
Calculations for *Area/depth* Inputs Above		
Waste Site Base Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
Waste Site Ground Surface Area (sf) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
Total Volume of Excavation (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11

Excavation		
Alternative Name	**Alternative 2 & 3**	**Alternative 2 & 3**
Site Number	**UPR-100-K-1**	**100-K-47**
Total Volume Contaminated (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
Total Volume of Overburden for Reuse (cy) - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11
% of Excavated Material to be Used as Backfill - CHECK EQUATION	BPO-1-26-11	BPO-1-26-11

Groundwater Extraction Wells

Alternative Name/Number	**Alternative 2**
Site Number	**100-K-73**
Wells	
Number of Wells	1
Flow rate per well, gpm	50
Type of Formation	Unconsolidated
Type of Aquifer	Unconfined
Depth to Static Water Table, ft	65
Depth to Top of Confining Layer, ft	
Depth to Bottom of Confining Layer, ft	
Depth to Base of Contamination, ft	85
Ground Surface	Soil/Gravel
Expected Safety Level	C
Gate with Slurry Wall	No
Pumps and Wells	
Type of Submersible Pump	4", 56-95 gpm, 41'< Head <=100', 3 hp, w/ controls
Well Casing Diameter	10
Enclosure	Restricted Zone/Above Ground
Screen Length, ft	20
Pipes and Tanks	
Pipe Type/Length	
Location	Aboveground
Type	PVC Schedule 40
Length, ft	1000
Transfer Piping Diameter (in)	2
User Specified size (in)	
Effluent Collection Tank	No
Type	None
Number of Tanks	
Confidence Level in Information	Medium
Notes	
Comments	
Originator	Brad A. Woodard
Date	4/27/2011
Estimator	
Date	12/1/2010

Groundwater Extraction Wells

Alternative Name/Number	**Alternative 2**
Site Number	**116-KE-1**
Wells	
Number of Wells	1
Flow rate per well, gpm	50
Type of Formation	Unconsolidated
Type of Aquifer	Unconfined
Depth to Static Water Table, ft	65
Depth to Top of Confining Layer, ft	
Depth to Bottom of Confining Layer, ft	
Depth to Base of Contamination, ft	85
Ground Surface	Soil/Gravel
Expected Safety Level	C
Gate with Slurry Wall	No
Pumps and Wells	
Type of Submersible Pump	4", 56-95 gpm, 41'< Head <=100', 3 hp, w/ controls
Well Casing Diameter	10
Enclosure	Restricted Zone/Above Ground
Screen Length, ft	20
Pipes and Tanks	
Pipe Type/Length	
Location	Aboveground
Type	PVC Schedule 40
Length, ft	1000
Transfer Piping Diameter (in)	2
User Specified size (in)	
Effluent Collection Tank	No
Type	None
Number of Tanks	
Confidence Level in Information	Medium
Notes	
Comments	
Originator	Kellen Brockman
Date	8/1/2011
Estimator	
Date	

Groundwater Extraction Wells

Alternative Name/Number	**Alternative 2**
Site Number	**116-KE-2**
Wells	
Number of Wells	1
Flow rate per well, gpm	50
Type of Formation	Unconsolidated
Type of Aquifer	Unconfined
Depth to Static Water Table, ft	65
Depth to Top of Confining Layer, ft	
Depth to Bottom of Confining Layer, ft	
Depth to Base of Contamination, ft	85
Ground Surface	Soil/Gravel
Expected Safety Level	C
Gate with Slurry Wall	No
Pumps and Wells	
Type of Submersible Pump	4", 56-95 gpm, 41'< Head <=100', 3 hp, w/ controls
Well Casing Diameter	10
Enclosure	Restricted Zone/Above Ground
Screen Length, ft	20
Pipes and Tanks	
Pipe Type/Length	
Location	Aboveground
Type	PVC Schedule 40
Length, ft	1000
Transfer Piping Diameter (in)	2
User Specified size (in)	
Effluent Collection Tank	No
Type	None
Number of Tanks	
Confidence Level in Information	Medium
Notes	
Comments	
Originator	Brad A. Woodard
Date	2/1/2011
Estimator	
Date	12/1/2010

Groundwater Extraction Wells

Alternative Name/Number	**Alternative 2**
Site Number	**116-KW-1**
Wells	
Number of Wells	1
Flow rate per well, gpm	50
Type of Formation	Unconsolidated
Type of Aquifer	Unconfined
Depth to Static Water Table, ft	65
Depth to Top of Confining Layer, ft	
Depth to Bottom of Confining Layer, ft	
Depth to Base of Contamination, ft	85
Ground Surface	Soil/Gravel
Expected Safety Level	C
Gate with Slurry Wall	No
Pumps and Wells	
Type of Submersible Pump	4", 56-95 gpm, 41'< Head <=100', 3 hp, w/ controls
Well Casing Diameter	10
Enclosure	Restricted Zone/Above Ground
Screen Length, ft	20
Pipes and Tanks	
Pipe Type/Length	
Location	Aboveground
Type	PVC Schedule 40
Length, ft	2000
Transfer Piping Diameter (in)	2
User Specified size (in)	
Effluent Collection Tank	No
Type	None
Number of Tanks	
Confidence Level in Information	Medium
Notes	
Comments	
Originator	Kellen Brockman
Date	8/12/2011
Estimator	
Date	12/2/2010

Groundwater Extraction Wells

Alternative Name/Number	**Alternative 2**
Site Number	**116-KW-2**
Wells	
Number of Wells	1
Flow rate per well, gpm	50
Type of Formation	Unconsolidated
Type of Aquifer	Unconfined
Depth to Static Water Table, ft	65
Depth to Top of Confining Layer, ft	
Depth to Bottom of Confining Layer, ft	
Depth to Base of Contamination, ft	85
Ground Surface	Soil/Gravel
Expected Safety Level	C
Gate with Slurry Wall	No
Pumps and Wells	
Type of Submersible Pump	4", 56-95 gpm, 41'< Head <=100', 3 hp, w/ controls
Well Casing Diameter	10
Enclosure	Restricted Zone/Above Ground
Screen Length, ft	20
Pipes and Tanks	
Pipe Type/Length	
Location	Aboveground
Type	PVC Schedule 40
Length, ft	2000
Transfer Piping Diameter (in)	2
User Specified size (in)	
Effluent Collection Tank	No
Type	None
Number of Tanks	
Confidence Level in Information	Medium
Notes	
Comments	
Originator	Brad A. Woodard
Date	4/27/2011
Estimator	
Date	12/2/2010

Groundwater Extraction Wells

Alternative Name/Number	**Alternative 3**
Site Number	**116-K-3**
Wells	
Number of Wells	1
Flow rate per well, gpm	50
Type of Formation	Unconsolidated
Type of Aquifer	Unconfined
Depth to Static Water Table, ft	65
Depth to Top of Confining Layer, ft	
Depth to Bottom of Confining Layer, ft	
Depth to Base of Contamination, ft	85
Ground Surface	Soil/Gravel
Expected Safety Level	C
Gate with Slurry Wall	No
Pumps and Wells	
Type of Submersible Pump	4", 56-95 gpm, 41'< Head <=100', 3 hp, w/ controls
Well Casing Diameter	10
Enclosure	Restricted Zone/Above Ground
Screen Length, ft	20
Pipes and Tanks	
Pipe Type/Length	
Location	Aboveground
Type	PVC Schedule 40
Length, ft	1000
Transfer Piping Diameter (in)	2
User Specified size (in)	
Effluent Collection Tank	No
Type	None
Number of Tanks	
Confidence Level in Information	Medium
Notes	
Comments	
Originator	Kellen Brockman
Date	8/1/2011
Estimator	
Date	

Groundwater Extraction Wells

Alternative Name/Number	**Alternative 2**
Site Number	**120-KE-1**
Wells	
Number of Wells	1
Flow rate per well, gpm	50
Type of Formation	Unconsolidated
Type of Aquifer	Unconfined
Depth to Static Water Table, ft	65
Depth to Top of Confining Layer, ft	
Depth to Bottom of Confining Layer, ft	
Depth to Base of Contamination, ft	85
Ground Surface	Soil/Gravel
Expected Safety Level	C
Gate with Slurry Wall	No
Pumps and Wells	
Type of Submersible Pump	4", 56-95 gpm, 41'< Head <=100', 3 hp, w/ controls
Well Casing Diameter	10
Enclosure	Restricted Zone/Above Ground
Screen Length, ft	20
Pipes and Tanks	
Pipe Type/Length	
Location	Aboveground
Type	PVC Schedule 40
Length, ft	2000
Transfer Piping Diameter (in)	2
User Specified size (in)	
Effluent Collection Tank	No
Type	None
Number of Tanks	
Confidence Level in Information	Medium
Notes	
Comments	
Originator	Kellen Brockman
Date	7/25/2011
Estimator	
Date	12/2/2010

In Situ Land Farming

Alternative Name/Number	**Alternative 2**	**Alternative 2**
Site Number	**100-K-48**	**100-K-49**
System Definition		
Area of Contaminated Soil, sf	1000	1000
Treatment Duration, weeks	40	40
Depth of Contamination, in	12	12
Expected Safety Level	D	D
Additives		
Tiling Frequency, times per week	1	1
Watering Frequency, times per month	4	4
Fertilizing Frequency, times per week	0	0
Microorganism Addition	No	

Technology Notes:

Confidence Level in Information	Medium	Medium
Notes		
Comments		
Originator	Brad A. Woodard	Kellen Brockman
Date	4/27/2011	7/25/2011
Estimator		
Date	12/1/2010	

Groundwater Monitoring Wells

Alternative Name/Number	Alt 2/100-K-73	Alt 2/116-K-3	Alt 2/130-KE-2	Alt 2/116-KE-1	Alt 2/116-KE-2	Alt 2/116-KW-1	Alt 2/116-KW-2	Alt 2/120-KE-1
Safety Level								
Aquifer One								
Depth to Groundwater, ft	65	65	65	65	65	65	65	65
Number of Wells	4	4	2	4	4	4	6	2
Aquifer Two	VERIFY Need	VERIFY Need	VERIFY Need	VERIFY Need	VERIFY Need	VERIFY Need	VERIFY Need	VERIFY Need
Depth to Groundwater, ft	0	0	0	0	0	0	0	0
Number of Wells	0	0	0	0	0	0	0	0
Aquifer Three	VERIFY Need	VERIFY Need	VERIFY Need	VERIFY Need	VERIFY Need	VERIFY Need	VERIFY Need	VERIFY Need
Depth to Groundwater, ft	0	0	0	0	0	0	0	0
Number of Wells	0	0	0	0	0	0	0	0
Include Guard Posts	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Expected Safety Level	D	D	D	D	D	D	D	D
Aquifer One								
Average Well Depth, lf	85	85	85	85	85	85	85	50
Formation Type	Unconsolidated	Unconsolidatec	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated	Unconsolidated
Drilling Method	Air Rotary	Air Rotary	Air Rotary	Air Rotary	Air Rotary	Air Rotary	Air Rotary	Air Rotary
Well Diameter, inch	2	2	2	2	2	2	2	2
Sonic Drilling Casing Size, inch								
System Redundancy								
Aquifer Two								
Aquifer Three								
Confidence Level in Information	High	High		High	High	High	High	High
Notes			Vapor monitoring well					This is a vadose zone monitoring point. Installed in vadose zone.
Comments								
Originator	Brad A. Woodard	Brad A. Woodard	Kellen Brockman	Kellen Brockman	Brad A. Woodard	Brad A. Woodard	Brad A. Woodard	Kellen Brockman
Date	4/27/2011	3/17/2011	8/1/2011	7/25/2011	2/1/2011	4/27/2011	4/27/2011	7/25/2011
Estimator								
Date	12/1/2010	12/1/2010		12/1/2010	12/1/2010	12/1/2010	12/1/2010	12/1/2010

Technology Notes:
Analytical methods will be defined using the Monitoring technology scoping form.
COCs will be defined in the Waste Site Attribute Table or listed in the Notes on this form.

AIR STRIPPING

SYSTEM DEFINITION

Type of Air Stripper: (Select) ○ Packed Tower

● Low Profile Tray Stack

Removal Percentage ____90_____ % *(valid range: 50 to 99.95%)*

Influent Flow Rate _____150_____ GPM *(valid range: 10 to 2,250 GPM)*

Volatility of Contaminants (Select) ___ Low

___Moderate

_X_ High

___Very High

Safety Level: A | B | C | **D** | E

CONFIGURATION

Packed Tower

Diameter: _____ FT *(valid range: 1, 1.5, 2, 3 ,4, 6, 8, 10, 12FT)*

Height: _____ FT *(valid range: 10 to 18FT)*

Low Profile Stripper

Number of Tray: _____6____ *(valid range: 1 to6)*

Number of Strippers: _____1_____ *(valid range: 1 to 2)*

Notes: Sizing information based on F/IU area modeling, completed with modeling software provided by Vendor (QED Environmental).

Comments:

Originator (Name): *Kellen Brockman* Date: 8/12/11

Estimator (Name): Steve Ferries Date 8/18/11

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AIR STRIPPING

SYSTEM DEFINITION

Type of Air Stripper: (Select) ○ Packed Tower

● Low Profile Tray Stack

Removal Percentage ____90_____ % *(valid range: 50 to 99.95%)*

Influent Flow Rate _____150_____ GPM *(valid range: 10 to 2,250 GPM)*

Volatility of Contaminants (Select) ___ Low

___Moderate

_X_ High

___Very High

Safety Level: A | B | C | **D** | E

CONFIGURATION

Packed Tower

Diameter: _____ FT *(valid range: 1, 1.5, 2, 3 ,4, 6, 8, 10, 12FT)*

Height: _____ FT *(valid range: 10 to 18FT)*

Low Profile Stripper

Number of Tray: _____6____ *(valid range: 1 to6)*

Number of Strippers: _____1_____ *(valid range: 1 to 2)*

Notes: Sizing information based on F/IU area modeling, completed with modeling software provided by Vendor (QED Environmental).

Comments:

Originator (Name): *Kellen Brockman* Date: 7/25/11

Estimator (Name): Steve Ferries Date 8/18/11

2

BIO VENTING_130-KE-2

SYSTEM DEFINITION

Installation Type: (Select) ● Vertical Well

○ Horizontal Trench

Vertical Wells

Surface Area of Contamination:____29,000_____ SF *(valid range: 100to 1,000,000 SF)*

Depth to Base of Contamination :_____50_____ FT*(valid range: 5 to 990 FT)*

Horizontal Trenches

Horizontal Screen Length:_____ Ft *(valid range: 5 to 2,000 SF)*

Soil Type: (Select) ___ Silt/Silty-Clay Mixture

___ Sand/Gravelly Sand Mixture

___ Sand Silt/Sand Clay Mixture

_X_ Gravel/Gravel Sand Mixture

Safety Level: A | B | C | D | E

DRILLING

Average Well Depth ____50_____ FT *(valid range: 5 to 100 FT)*

Formation Type: (Select) ___ Consolidated

_X_Unconsolidated

Drilling Method: (Select) _ X _ Air Rotary

___ Hollow Stem

___Sonic Drilling

Well Diameter: (Select) ___ 2 Inch

_ X _4 Inch

Sonic Drilling Casing Size: (Select – If Applicable) ___ 5" – 6"

___ 7" – 8"

___9" – 10"

___11" – 12"

Well Construction Material: (Select) ___ PVC Schedule 40

_ X _ PVC Schedule 80

___ Stainless Steel

Split Spoon Sample Collection: (Check – If Applicable) ☐

Soil Analytical Template

Average Number of Soil Samples per Well: __5__ *(valid range: 0 to 20)*

(Select) None

System Soil – Acid/Caustics

System Soil – Asbestos

System Soil – Fuels

System Soil – Herbicides

System Soil – Low Level Radioactive

System Soil – Metals

System Soil – Multi-Contaminant

System Soil – Ordnance Residual

System Soil – PCB's

System Soil – Perchlorate

System Soil – Pesticides

System Soil – SVOC's

System Soil – VOC's

Waste Characterization, Solids

200-UP1-GW OU (soil analysis)1

Safety Level: A | B | C | D | E

VERTICAL WELLS

Extraction Well Spacing:____100_____ FT *(valid range: 10 to 200 SF)*

Number of Vapor Extraction Wells: ____2_____ *(valid range: 1 to2,632)*

Average Vapor Flow Rate per Well: ____20_____ CFM *(valid range: 1 to 200 CFM)*

Total Vapor Flow Rate: _____40____ CFM *(valid range: 1 to 100,000 CFM)*

Knockout Drums: _____1_____ *(valid range: 0 to 2)*

Equipment Enclosure: (Check – If Applicable) ☐

Notes: _____

Comments: _____ Form completed by Brad Woodard/CH2MHILL 4/29/11_____

Technical SME (Name): Kevin Klink Date 8/18/2011

Signature: _____

Estimator (Name): Steven Ferries Date 8/18/2011

Signature: _____

BIO VENTING_130-KW-2

SYSTEM DEFINITION

Installation Type: (Select) ● Vertical Well

○ Horizontal Trench

Vertical Wells

Surface Area of Contamination:____29,000_____ SF *(valid range: 100to 1,000,000 SF)*

Depth to Base of Contamination :_____50_____ FT*(valid range: 5 to 990 FT)*

Horizontal Trenches

Horizontal Screen Length:_____ Ft *(valid range: 5 to 2,000 SF)*

Soil Type: (Select) ___ Silt/Silty-Clay Mixture

___ Sand/Gravelly Sand Mixture

___ Sand Silt/Sand Clay Mixture

_X_ Gravel/Gravel Sand Mixture

Safety Level: A | B | C | D | E

DRILLING

Average Well Depth ____50_____ FT *(valid range: 5 to 100 FT)*

Formation Type: (Select) ___ Consolidated

_X_Unconsolidated

Drilling Method: (Select) _ X _ Air Rotary

___ Hollow Stem

___Sonic Drilling

Well Diameter: (Select) ___ 2 Inch

_ X _4 Inch

Sonic Drilling Casing Size: (Select – If Applicable) ___ 5" – 6"

___ 7" – 8"

___9" – 10"

___11" – 12"

Well Construction Material: (Select) ___ PVC Schedule 40

_ X _ PVC Schedule 80

___ Stainless Steel

Split Spoon Sample Collection: (Check – If Applicable) ☐

Soil Analytical Template

Average Number of Soil Samples per Well: __5__ *(valid range: 0 to 20)*

(Select) None

System Soil – Acid/Caustics

System Soil – Asbestos

System Soil – Fuels

System Soil – Herbicides

System Soil – Low Level Radioactive

System Soil – Metals

System Soil – Multi-Contaminant

System Soil – Ordnance Residual

System Soil – PCB's

System Soil – Perchlorate

System Soil – Pesticides

System Soil – SVOC's

System Soil – VOC's

Waste Characterization, Solids

200-UP1-GW OU (soil analysis)1

Safety Level: A | B | C | D | E

VERTICAL WELLS

Extraction Well Spacing: 100 FT *(valid range: 10 to 200 SF)*

Number of Vapor Extraction Wells: 2 *(valid range: 1 to2,632)*

Average Vapor Flow Rate per Well: 20 CFM *(valid range: 1 to 200 CFM)*

Total Vapor Flow Rate: 40 CFM *(valid range: 1 to 100,000 CFM)*

Knockout Drums: 1 *(valid range: 0 to 2)*

Equipment Enclosure: (Check – If Applicable) ☐

Notes: _____

Comments: Form completed by Brad Woodard/CH2MHILL 4/29/11

Technical SME (Name): Kevin Klink Date 8/18/2011

Signature: [signature]

Estimator (Name): Steven Ferries Date 8/18/2011

Signature: [signature]

Bioinfiltration		
Alternative Name/Number	**Alternative 2**	**Alternative 2**
Site Number	**K East**	**K West**
Estimating Method (choose one)		
Length/width		
Length, ft	0	0
Width, ft	0	0
Emitter Area, ac	1	1
Emitter Depth	1	1
Backfill Material	Rock	Rock
Backfill Hauling Distance	20	20
Dewatering Required	Fixed at "No"	Fixed at "No"
Soil Type		
Expected Safety Level	C	C
Manual Product Removal		
PIPES & TANKS		
Flow Mechanism	Force Main	Force Main
Distance from Water source to Emitter system	4500	2000
Transfer Piping Diameter (HDPE, in)	4	3
User Specified size (in)		
Substrate Tank		
Equalization Tank	20000 Gallon Horizontal Plastic	20000 Gallon Horizontal Plastic
Pumps	200 GPM, 10 hp, Transfer pump with motor, valves, piping	200 GPM, 10 hp, Transfer pump with motor, valves, piping
Biofouling Prevention Chemical Feeder		N/A

Technology Notes:
Consider need for acid addition system for system cleaning. Prepare emitter schematic if time allows

Confidence Level in Information	Low	Low
Notes		
Comments		
Originator	Kellen Brockman	Kellen Brockman
Date	7/29/2011	7/29/2011
Estimator		
Date	12/1/2010	12/1/2010

Bioinjection Node (BioNode)

Alternative Name/Number	**Alternative 2**
Site Number	**100-KR-4**
Expected Safety Level	
PIPES & TANKS	
Flow Mechanism	Force Main
Transfer Piping Diameter (HDPE, in)	3
User Specified size (in)	
Distance from Tanks to furthest well	9,500
Substrate Tank	6000 Gallon Horizontal Plastic (substrate)
Equalization Tank	20000 Gallon Horizontal Plastic
Pumps	200 GPM, 10 hp, Transfer pump with motor, valves, piping
Biofouling Prevention Chemical Feeder	
Electrical Service to node	2

Technology Notes:
Consider need for acid addition system for system cleaning. Prepare emitter schematic if time allows.

Confidence Level in Information	Medium
Notes	Need two of each type of tank and pump specified
Comments	
Originator	Kellen Brockman
Date	7/29/2011
Estimator	
Date	12/1/2010

Groundwater Extraction Wells

Alternative Name/Number	**Alternative 2**	**Alternative 3**
Site Number	**100-KR-4**	**100-KR-4**
Wells		
Number of Wells	29	53
Flow rate per well, gpm	35	35
Type of Formation	Unconsolidated	Unconsolidated
Type of Aquifer	Unconfined	Unconfined
Depth to Static Water Table, ft	75	75
Depth to Top of Confining Layer, ft		
Depth to Bottom of Confining Layer, ft		
Depth to Base of Contamination, ft	150	150
Ground Surface	Soil/Gravel	Soil/Gravel
Expected Safety Level	D	D
Gate with Slurry Wall	No	No
Pumps and Wells		
Type of Submersible Pump	4", 56-95 gpm, 101'< Head <=220', 5 hp, w/ controls	4", 56-95 gpm, 101'< Head <=220', 5 hp, w/ controls
Well Casing Diameter (in)	10	10
Enclosure	Restricted Zone/Above Ground	Restricted Zone/Above Ground
Screen Length, ft	80	80
Pipes and Tanks		
Pipe Type/Length		
Location	Aboveground	Aboveground
Type	HDPE	HDPE
Length, ft	20000	50000
Transfer Piping Diameter (in)	3	3
User Specified size (in)		
Effluent Collection Tank	No	No
Type		
Number of Tanks		
Confidence Level in Information	Medium	Medium
Notes		
Comments		
Originator	Kellen Brockman	Kellen Brockman
Date	7/28/2011	7/28/2011
Estimator		
Date		

Injection Wells

Alternative Name/Number	**Alternative 2**	**Alternative 3**
Site Number	**100-KR-4**	**100-KR-4**
Aquifer		
Depth to Top of Aquifer, ft	75	75
Aquifer Thickness, ft	80	80
Wells		
Injection Rate per Well, gpm	100	100
Number of Injection Wells	6	12
Expected Safety Level	D	D
Expected Safety Level	D	D
Formation Type	Unconsolidated	Unconsolidated
Wells		
Well Construction Material	Stainless Steel	Stainless Steel
Well Diameter	10	10
Screen Length per well, ft	40	40
Drilling		
Drilling Method	Air Rotary	Air Rotary
Drum Drill Cuttings	Yes	Yes
Well Head Completion	Aboveground	Aboveground
Pipes/Tanks		
Influent Piping Type	Other	Other
or other (if not on list)	HDPE - 3" diameter	HDPE - 3" diameter
Length, ft	1000	5000
Feed Tank(s)	None	None
# of Tanks		
or other (if not on list)	None	None

Technology Notes:
Analytical methods will be defined using the Monitoring technology scoping form.
COCs will be defined in the Waste Site Attribute Table or listed in the Notes on this form.

Confidence Level in Information	Medium	Medium
Notes		
Comments		
Originator	Kellen Brockman	Kellen Brockman
Date	7/28/2011	7/28/2011
Estimator		
Date		

Ion Exchange

Alternative Name/Number	**Alternative 2**	**Alternative 3**
Site Number	**100-KR-4**	**100-KR-4**
Flowrate, gpm		
Constituent 1	**Cr (VI)**	**Cr (VI)**
Concentration Range, mg/L	**>0.1-0.5**	**>0.1-0.5**
Constituent 2		
Concentration Range, mg/L		
Constituent 3		
Concentration Range, mg/L		
Installation Type	Fixed	Fixed
Expect Safety Level	D	D

Technology Notes:

Constituents should be the primary constituents needing treatment. This should be consistent with the Waste Site Table. Installation type is either fixed or mobile. Mobile should only be used for interim or short term (<1 year) applications Concentration ranges should be confirmed with groundwater modelers or lead engineer. For other radioactive compounds besides uranium, select N/A and add to notes about concentrations. If it is possible to calculate an initial maximum and long term average concentration would be useful. If this is available add to the notes.
Conceptual design assumes no competing ions will interfere with IX process or foul the resin.

Confidence Level in Information	High	Low
Notes		
Comments		
Originator	Kellen Brockman	Kellen Brockman
Date	7/29/2011	7/29/2011
Estimator		
Date		

Monitoring

Alternative Name/Number	**Alternative 2**	**Alternative 3**
Site Number	**100-KR-4**	**100-KR-4**
Media	Groundwater	Groundwater
Site Distance, mi	1	1
Expected Safety Level	D	D

COCs must be identified on Waste Site Attributes table

Groundwater

Average Sample Depth, ft	100	100
# of Events (First Year)	4	8
Samples/Event (First Year)	4	8
# of Yrs (Out Years)	35	18
Events per Yr (Out Years)	1	1
Lower Frequency (enter as text)	Annual	Annual
Samples/Event (Out Years)	4	8
Turnaround Time	Standard	Standard

Technology Notes:

SOPs for sampling methods, production rates, IDW management, QA/QC, data analysis and validation, and reporting have been referenced for developing accurate estimates

Confidence Level in Information	Medium	Medium
Notes		
Comments		
Originator	Kellen Brockman	Kellen Brockman
Date	7/29/2011	7/29/2011
Estimator		
Date		

Groundwater Monitoring Wells

Alternative Name/Number	**Alternative 2**	**Alternative 3**
Site Number	**100-KR-4**	**100-KR-4**
Aquifer One		
Depth to Groundwater, ft	75	75
Number of Wells	4	8
Aquifer Two	Not needed	Not needed
Depth to Groundwater, ft	0	0
Number of Wells	0	0
Aquifer Three	Not Needed	Not Needed
Depth to Groundwater, ft	0	0
Number of Wells	0	0
Include Guard Posts	Yes	Yes
Expected Safety Level	D	D
Aquifer One		
Average Well Depth, lf	115	115
Formation Type	Unconsolidated	Unconsolidated
Drilling Method	Air Rotary	Air Rotary
Well Diameter, inch	6	6
Sonic Drilling Casing Size, inch	7"-8"	7"-8"
System Redundancy	Stainless Steel	Stainless Steel
Aquifer Two	Not needed	
Aquifer Three	No needed	

Technology Notes:
Analytical methods will be defined using the Monitoring technology scoping form.
COCs will be defined in the Waste Site Attribute Table or listed in the Notes on this form.

Confidence Level in Information	Medium	Medium
Notes		
Comments		
Originator	Kellen Brockman	Kellen Brockman
Date	7/29/2011	7/29/2011
Estimator		
Date		

IX	WellName	Easting	Northing	Jan2011-Dec2011	Jan2012-Dec2012	Jan2013-Dec2013	Jan2014-Dec2014	Jan2015-Dec2015	Jan2016-Dec2016	Jan2017-Dec2017	Jan2018-Dec2018	Jan2019-Dec2019	Jan2020-Dec2020	Jan2021-Dec2037	Jan2038-Dec2087
KR-4	199-K-120A	569399.6150	147518.4770	-20.0	-20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KR-4	199-K-113A	570098.0700	148294.4530	-20.0	-15.0	-15.0	-15.0	-15.0	-15.0	-15.0	-15.0	-15.0	-15.0	-15.0	0.0
KR-4	199-K-114A	570020.3020	148280.5500	-30.0	-25.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	0.0	0.0
KR-4	199-K-115A	569939.9880	148135.4170	-30.0	-25.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	0.0	0.0
KR-4	199-K-116A	569871.1490	147960.4950	-25.0	-20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KR-4	199-K-121A	570017.1650	147418.2600	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	0.0
KR-4	199-K-122A	569975.0680	147172.8590	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	0.0
KR-4	199-K-123A	569931.1030	147090.2440	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	60.0	0.0
KR-4	199-K-127	569539.2340	147539.0020	-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KR-4	199-K-128	570009.5380	147257.5200	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	30.0	0.0
KR-4	199-K-129	570283.6500	148503.0700	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	0.0
KR-4	199-K-144	569163.2700	147265.9500	-35.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	0.0
KR-4	199-K-145	569268.4000	147424.3000	-35.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	0.0	0.0
KR-4	199-K-162	569340.0000	147459.9700	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	0.0	0.0
KR-4	199-K-179	569847.1700	147481.7900	60.0	60.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	0.0	0.0
KR-4	199-K-198	569305.6900	147552.2200	0.0	-25.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	0.0	0.0
KR-4	199-K-199	569339.6500	147584.4200	0.0	-25.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	0.0	0.0
KW	199-K-132	568495.1200	146670.8200	-30.0	-25.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	0.0
KW	199-K-137	568653.3700	146374.5100	-20.0	-15.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	20.0	20.0	0.0	0.0
KW	199-K-138	568395.2200	146616.6400	-30.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	0.0
KW	199-K-139	568551.3900	146518.3900	-20.0	-10.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	0.0	0.0
KW	199-K-158	568627.4500	146164.4100	50.0	50.0	40.0	40.0	40.0	70.0	70.0	70.0	0.0	0.0	0.0	0.0
KW	199-K-165	568674.9600	146342.4200	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	0.0	0.0	0.0	0.0
KW	199-K-166	568594.5600	146342.9700	-20.0	-15.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	20.0	20.0	0.0	0.0
KW	199-K-168	568544.3700	146513.6300	-20.0	-15.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	0.0	0.0
KW	199-K-174	568915.3200	146222.4900	40.0	40.0	20.0	20.0	20.0	110.0	110.0	110.0	75.0	75.0	100.0	0.0
KW	199-K-175	568920.9800	146021.6600	80.0	80.0	0.0	0.0	0.0	70.0	70.0	70.0	65.0	65.0	0.0	0.0
KW	199-K-196	568433.3900	146639.0300	0.0	-35.0	-40.0	-40.0	-40.0	-35.0	-35.0	-35.0	-40.0	-40.0	-40.0	0.0
KW	KW_Bio_HeadHouse	568881.3270	146022.5057	0.0	0.0	160.0	160.0	160.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KW	KW-1	568609.0000	146546.0000	0.0	0.0	0.0	0.0	0.0	-35.0	-35.0	-35.0	-40.0	-40.0	0.0	0.0
KX	199-K-141	569024.2200	146818.4900	-25.0	-25.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	0.0	0.0
KX	199-K-111A	569308.2000	146968.9000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	50.0	50.0	0.0	0.0
KX	199-K-130	570478.9900	148661.1800	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-15.0	0.0
KX	199-K-131	570662.0000	148903.8500	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0	-20.0	0.0
KX	199-K-143	570934.4100	148088.2800	60.0	60.0	110.0	110.0	95.0	95.0	60.0	50.0	80.0	80.0	0.0	0.0
KX	199-K-146	570194.6500	148380.3600	-15.0	-15.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	0.0
KX	199-K-147	570411.6400	148558.1600	-20.0	-20.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	0.0
KX	199-K-148	570585.2500	148767.9000	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0	-45.0	-25.0	0.0

IX	WellName	Easting	Northing	Jan2011-Dec2011	Jan2012-Dec2012	Jan2013-Dec2013	Jan2014-Dec2014	Jan2015-Dec2015	Jan2016-Dec2016	Jan2017-Dec2017	Jan2018-Dec2018	Jan2019-Dec2019	Jan2020-Dec2020	Jan2021-Dec2037	Jan2038-Dec2087
KX	199-K-149	570778.6000	148970.4500	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	0.0	0.0	0.0	0.0	0.0
KX	199-K-150	570788.6200	149053.1700	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	0.0	0.0	0.0	0.0	0.0
KX	199-K-151	570941.2200	148686.4300	0.0	0.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	0.0	0.0	0.0	0.0
KX	199-K-152	570736.4100	148585.8400	0.0	0.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	-20.0	0.0	0.0
KX	199-K-153	570530.0300	148209.9900	-25.0	-25.0	-25.0	-25.0	-25.0	-25.0	-15.0	-25.0	-25.0	-25.0	-25.0	0.0
KX	199-K-154	570320.6900	148027.7200	-35.0	-35.0	-35.0	-35.0	-30.0	-30.0	-30.0	-35.0	-35.0	-35.0	-30.0	0.0
KX	199-K-156	569674.1200	147270.7900	60.0	60.0	100.0	100.0	60.0	60.0	60.0	50.0	55.0	55.0	55.0	0.0
KX	199-K-159	570911.9800	149159.8600	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	199-K-160	570930.1300	149120.0800	20.0	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	199-K-161	570004.4300	148202.1300	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	0.0	0.0	0.0	0.0	0.0
KX	199-K-163	570230.6600	147947.9300	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-15.0	-30.0	-30.0	-30.0	0.0	0.0
KX	199-K-164	571202.2200	148903.7400	45.0	45.0	100.0	100.0	70.0	70.0	40.0	0.0	0.0	0.0	0.0	0.0
KX	199-K-169	569988.9700	147554.9800	60.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	199-K-170	570009.0100	147491.3700	60.0	60.0	100.0	100.0	60.0	60.0	35.0	0.0	0.0	0.0	0.0	0.0
KX	199-K-171	570544.0300	147187.8600	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	95.0	100.0	100.0	65.0	0.0
KX	199-K-172	570871.6900	147166.3700	70.0	70.0	110.0	110.0	90.0	90.0	70.0	0.0	0.0	0.0	0.0	0.0
KX	199-K-178	568962.8200	146954.5500	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	0.0
KX	199-K-180	571116.0800	147449.1400	60.0	60.0	110.0	110.0	90.0	90.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	199-K-181	568856.4000	146899.5800	-20.0	-20.0	-30.0	-30.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-20.0	0.0
KX	199-K-182	571266.1470	148390.6220	0.0	0.0	105.0	105.0	85.0	85.0	70.0	40.0	40.0	40.0	0.0	0.0
KX	199-K-191	569710.7600	146885.9700	0.0	0.0	100.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	199-K-192	569394.0200	147292.6400	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	0.0
KX	KE_Bio_HeadHouse	569359.3500	146289.7300	0.0	0.0	0.0	0.0	285.0	285.0	140.0	140.0	140.0	140.0	0.0	0.0
KX	KE-1	569302.0000	147335.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	0.0
KX	KE-10	569188.0000	146624.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	90.0	90.0	90.0	90.0	100.0	0.0
KX	KE-11	569094.0000	146412.0000	0.0	0.0	-35.0	-35.0	100.0	100.0	90.0	90.0	0.0	0.0	0.0	0.0
KX	KE-12	569806.0000	146707.0000	0.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	KE-13	569754.0000	146397.0000	0.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	KE-14	569198.0000	146166.0000	0.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	KE-15	569248.0000	147126.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-25.0	0.0
KX	KE-16	569534.0000	146554.0000	0.0	0.0	-35.0	-35.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	KE-17	569476.0000	146029.0000	0.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	KE-18	569575.0000	146237.0000	0.0	0.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	KE-19	569171.0000	147089.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	0.0	0.0
KX	KE-2	569353.0000	147195.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	0.0
KX	KE-3	569227.0000	146817.0000	0.0	0.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	0.0	0.0
KX	KE-4	568946.0000	147112.0000	0.0	0.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-40.0	-30.0	0.0
KX	KE-5	569500.0000	147066.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	90.0	90.0	90.0	0.0

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Appendix A 100-KR-4 Alternative 2 Well Flow Rate Summary

IX	WellName	Easting	Northing	Jan2011-Dec2011	Jan2012-Dec2012	Jan2013-Dec2013	Jan2014-Dec2014	Jan2015-Dec2015	Jan2016-Dec2016	Jan2017-Dec2017	Jan2018-Dec2018	Jan2019-Dec2019	Jan2020-Dec2020	Jan2021-Dec2037	Jan2038-Dec2087
KX	KE-6	569595.0000	146705.0000	0.0	0.0	-35.0	-35.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
KX	KE-7	568956.0000	146693.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	0.0	0.0
KX	KE-8	569554.0000	146942.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	90.0	90.0	0.0	0.0	0.0	0.0
KX	KE-9	569417.0000	146791.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	90.0	90.0	0.0	0.0	0.0	0.0
KX	KN-1	569800.0000	148095.0000	0.0	0.0	-30.0	-30.0	-30.0	-30.0	-15.0	0.0	0.0	0.0	0.0	0.0
KX	KN-2	570317.0000	148286.0000	0.0	0.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	-30.0	0.0
KX	KN-3	570534.0000	147546.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	100.0	100.0	100.0	100.0	0.0	0.0
KX	KN-4	570490.0000	147835.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-40.0	-40.0	-40.0	-40.0	0.0	0.0
KX	KN-5	570673.0000	147618.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	100.0	100.0	100.0	100.0	0.0	0.0
KX	KN-6	570590.0000	147941.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-40.0	-40.0	-40.0	-40.0	0.0	0.0
KX	KN-7	570707.0000	148715.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-40.0	-40.0	-40.0	-40.0	0.0	0.0
KX	KW-2	568593.0000	146749.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	0.0	0.0
KX	KW-3	568666.0000	146789.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	0.0	0.0
KX	KW-4	568752.0000	146839.0000	0.0	0.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	-35.0	0.0	0.0
Extraction Total				-880.0	-880.0	-1860.0	-1860.0	-1760.0	-1790.0	-1590.0	-1490.0	-1330.0	-1330.0	-585.0	0.0
IX Injection Total				880.0	880.0	885.0	885.0	735.0	855.0	750.0	625.0	660.0	660.0	585.0	0.0
Bio Injection Total				0	0	975.0	975.0	1025.0	935.0	840.0	865.0	670.0	670.0	0	0
Number of Extraction Wells				32	34	59	59	56	57	52	47	41	41	21	0
Number of Injection Wells				17	17	13	13	13	13	13	11	13	13	9	0
Bio Injection Wells				0	0	9	9	8	8	9	9	7	7	0	0
Average Extraction GPM				-28	-26	-32	-32	-31	-31	-31	-32	-32	-32	-28	0
Average Injection GPM				52	52	68	68	57	66	58	57	51	51	65	0
Average Bio Injection GPM				0		108	108	128	104	93	96	96	95	0	0

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Appendix A 100-KR-4 Alternative 3 Well Flow Rate Summary

WellName	Easting	Northing	Jan2011-D	Jan2012-D	Jan2013-D	Jan2014-D	Jan2015-D	Jan2016-D	Jan2017-D	Jan2018-D	Jan2019-D	Jan2020-D	Jan2021-Dec2087
199-K-120A	569399.615	147518.477	-20	-20	0	0	0	0	0	0	0	0	0
199-K-127	569539.234	147539.002	-10	0	0	0	0	0	0	0	0	0	0
199-K-144	569163.34	147265.96	-35	-25	-25	-25	-25	-25	-25	-25	-25	-25	0
199-K-145	569284.6	147425.66	-35	-25	-25	-25	-25	-25	-25	-25	-25	-25	0
199-K-162	569340	147459.97	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	0
199-K-198	569305.69	147552.22	0	-25	-30	-30	-30	-30	-30	-30	-30	-30	0
199-K-199	569339.65	147584.42	0	-25	-30	-30	-30	-30	-30	-30	-30	-30	0
199-K-179	569847.25	147481.92	60	60	40	40	40	40	40	40	40	40	0
199-K-113A	570098.07	148294.453	-20	-15	-15	-15	-15	-15	-15	-15	-15	-15	0
199-K-114A	570020.302	148280.55	-30	-25	-30	-30	-30	-30	-30	-30	-30	-30	0
199-K-115A	569939.988	148135.417	-30	-25	-30	-30	-30	-30	-30	-30	-30	-30	0
199-K-116A	569871.149	147960.495	-25	-20	0	0	0	0	0	0	0	0	0
199-K-129	570283.65	148503.07	-25	-25	-25	-25	-25	-25	-25	-25	-25	-25	0
199-K-121A	570017.165	147418.26	35	35	35	35	35	35	35	35	35	35	0
199-K-122A	569975.068	147172.859	50	50	50	50	50	50	50	50	50	50	0
199-K-123A	569931.103	147090.244	60	60	60	60	60	60	60	60	60	60	0
199-K-128	570009.538	147257.52	50	50	50	50	50	50	50	50	50	50	0
199-K-132	568495.12	146670.82	-30	-25	-35	-35	-35	-35	-35	-35	-35	-35	0
199-K-138	568395.22	146616.64	-30	-25	-25	-25	-25	-25	-25	-25	-25	-25	0
199-K-168	568544.37	146513.63	-20	-15	-20	-20	-20	-20	-20	-20	-20	-20	0
199-K-166	568594.56	146342.97	-20	-15	-25	-25	-25	-25	-25	-25	20	20	0
199-K-137	568653.37	146374.51	-20	-15	-25	-25	-25	-25	-25	-25	20	20	0
199-K-165	568674.96	146342.42	-30	-30	-30	-30	-30	-30	-30	-30	0	0	0
199-K-139	568551.39	146518.39	-20	-10	-20	-20	-20	-20	-20	-20	-20	-20	0
199-K-196	568433.39	146639.03	0	-35	-40	-40	-40	-35	-35	-35	-40	-40	0
KW-1	568609	146546	0	0	0	0	0	-35	-35	-35	-40	-40	0
199-K-158	568627.45	146164.41	50	50	60	60	60	70	70	70	0	0	0
199-K-174	568915.38	146222.47	40	40	70	70	70	70	70	70	75	75	0
199-K-175	568882.72	146008.84	80	80	90	90	90	110	110	110	65	65	0
199-K-141	569024.22	146818.49	-25	-25	-25	-25	-25	-30	-30	-30	-30	-30	0
199-K-178	568963.01	146954.43	-40	-40	-35	-35	-35	-35	-35	-35	-35	-35	0
199-K-181	568849.75	146892.82	-20	-20	-20	-20	-20	-20	-20	-20	-20	-20	0
199-K-156	569674.01	147270.91	60	60	100	100	100	100	100	80	100	100	0
199-K-130	570478.99	148661.18	-40	-40	-40	-40	-40	-40	-40	-40	-40	-40	0
199-K-131	570662	148903.85	-45	-45	-45	-45	-45	-45	-45	-45	-45	-45	0
199-K-146	570197.6	148379.78	-15	-15	-25	-25	-25	-25	-25	-25	-25	-25	0
199-K-147	570411.64	148558.07	-20	-20	-30	-30	-30	-30	-30	-30	-30	-30	0
199-K-148	570584.74	148767.86	-45	-45	-45	-45	-45	-45	-45	-45	-45	-45	0

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Appendix A 100-KR-4 Alternative 3 Well Flow Rate Summary

WellName	Easting	Northing	Jan2011-D	Jan2012-D	Jan2013-D	Jan2014-D	Jan2015-D	Jan2016-D	Jan2017-D	Jan2018-D	Jan2019-D	Jan2020-D	Jan2021-Dec2087
199-K-149	570778.25	148970.74	-30	-30	-30	-30	-30	0	0	0	0	0	0
199-K-150	570787.67	149051.93	-25	-25	-20	-20	-20	0	0	0	0	0	0
199-K-153	570530.04	148210.08	-25	-25	-10	-10	-10	-25	-25	-25	-25	-25	0
199-K-154	570320.69	148027.72	-35	-35	-25	-25	-25	-30	-30	-30	-30	-30	0
199-K-161	570004.43	148202.13	-30	-30	-25	-25	-25	0	0	0	0	0	0
199-K-163	570230.66	147947.93	-30	-30	-10	-10	-10	0	0	0	0	0	0
199-K-143	570934.41	148088.28	60	60	80	80	80	70	70	70	50	50	0
199-K-159	570911.73	149159.61	20	20	0	0	0	0	0	0	0	0	0
199-K-160	570919.58	149116.02	20	20	0	0	0	0	0	0	0	0	0
199-K-164	571202.22	148903.74	45	45	100	100	100	0	0	0	0	0	0
199-K-169	569988.97	147554.98	60	60	100	100	100	60	60	60	60	60	0
199-K-170	570009.01	147491.37	60	60	100	100	100	60	60	60	60	60	0
199-K-171	570544.03	147187.86	-30	-30	-30	-30	-30	-30	100	0	0	0	0
199-K-172	570871.69	147166.37	70	70	100	100	100	0	0	0	0	0	0
199-K-180	571116.08	147449.14	60	60	100	100	100	0	0	0	0	0	0
199-K-111A	569308.169	146968.875	0	0	-30	-30	-30	-30	-30	-35	-35	-35	0
199-K-192	569394.02	147292.64	0	0	-20	-20	-20	-30	-30	-35	-30	-30	0
199-K-191	569710.76	146885.97	0	0	-20	-20	-20	80	80	50	0	0	0
199-K-151	570941.32	148686.44	0	0	-15	-15	-15	40	40	40	40	40	0
199-K-152	570736.25	148585.89	0	0	-15	-15	-15	-20	-20	-20	-30	-30	0
199-K-182	571185.32	148350.24	0	0	100	100	100	80	90	95	0	0	0
KE-1	569457	147043	0	0	-30	-30	-30	-35	-35	-35	90	90	0
KE-2	569349	147198	0	0	-30	-30	-30	-35	-35	-35	-40	-40	0
KE-3	569288	147132	0	0	-30	-30	-30	-35	-35	-35	-40	-40	0
KE-4	569549	146954	0	0	-30	-30	-30	-35	-35	90	90	85	0
KE-5	569402	146800	0	0	-30	-30	-30	-35	-35	90	90	85	0
KE-8	568946	147112	0	0	-30	-30	-30	-35	-35	-35	-40	-40	0
KE-10	569595	146720	0	0	-30	-30	-30	-35	90	90	30	35	0
KE-11	569496	146634	0	0	-30	-30	-30	-35	90	90	30	35	0
KE-12	569129	146429	0	0	-30	-30	-30	-35	90	80	35	35	0
KE-13	569113	146584	0	0	-30	-30	-30	-35	-35	90	35	35	0
KE-14	569287	146676	0	0	-30	-30	-30	-35	-35	90	35	35	0
KE-15	569212	146827	0	0	100	100	100	60	100	100	100	100	0
KE-16	569300	147345	0	0	-30	-30	-30	-35	-35	-35	-40	-40	0
KE-17	569262	146081	0	0	100	100	100	90	45	45	45	45	0
KE-18	569446	145992	0	0	100	100	100	90	0	0	0	0	0
KE-19	569832	146344	0	0	100	100	100	0	0	0	0	0	0
KE-20	569942	146860	0	0	100	100	100	100	0	0	0	0	0

Appendix A 100-KR-4 Alternative 3 Well Flow Rate Summary

WellName	Easting	Northing	Jan2011-D	Jan2012-D	Jan2013-D	Jan2014-D	Jan2015-D	Jan2016-D	Jan2017-D	Jan2018-D	Jan2019-D	Jan2020-D	Jan2021-Dec2087
KE-22	569740	146201	0	0	100	100	100	0	0	0	0	0	0
KE-23	569888	146600	0	0	100	100	100	100	0	0	0	0	0
KE-24	569312	146330	0	0	-30	-30	-30	90	95	0	0	0	0
KE-25	569612	146476	0	0	-30	-30	-30	90	95	0	0	0	0
KE-26	569293	146510	0	0	-30	-30	-30	-35	95	0	0	0	0
KE-27	569585	146324	0	0	-30	-30	-30	90	0	0	0	0	0
KE-28	569609	146074	0	0	100	100	100	100	0	0	0	0	0
KE-29	569470	146211	0	0	-30	-30	-30	90	0	0	0	0	0
KE-30	569470	146404	0	0	-30	-30	-30	90	100	0	0	0	0
KE-31	569093	146721	0	0	-30	-30	-30	-35	-35	-35	-35	-35	0
KE-32	568938	146809	0	0	-30	-30	-30	-35	-35	-35	-35	-35	0
KE-33	569430	147148	0	0	-30	-30	-30	-35	-35	-35	-35	-35	0
KE-34	569367	147091	0	0	-30	-30	-30	-35	-35	-35	-35	-35	0
KE-35	569265	147228	0	0	-30	-30	-30	-35	-35	-35	-35	-35	0
KE-36	569287	147051	0	0	-30	-30	-30	-35	-35	-35	-35	-35	0
KE-37	569206	146930	0	0	92.5	92.5	92.5	100	100	100	100	100	0
KE-38	569301	146785	0	0	-30	-30	-30	-35	-35	-35	-35	-35	0
KE-39	569176	147094	0	0	92.5	92.5	92.5	100	100	100	100	100	0
KE-40	568956	146889	0	0	-30	-30	-30	-35	-35	-35	-35	-35	0
KE-21	568948	146686	0	0	-30	-30	-30	-35	-35	-35	60	60	0
KN-9	570313	148325	0	0	-30	-30	-30	-30	-30	-30	-30	-30	0
KN-10	570452	148484	0	0	-30	-30	-30	-30	-30	-30	-40	-40	0
KN-11	569800	148095	0	0	-20	-20	-20	-30	-20	-20	-20	-20	0
KN-12	570975	147754	0	0	100	100	100	100	0	0	0	0	0
KN-1	570212	148209	0	0	-10	-10	-10	-30	-30	-30	-40	-40	0
KN-2	570418	147882	0	0	-25	-25	-25	-40	-40	-40	-40	-40	0
KN-3	570605	147902	0	0	-25	-25	-25	-40	-40	-40	-40	-40	0
KN-4	570876	148428	0	0	-25	-25	-25	-40	-40	-40	45	45	0
KN-5	570569	147635	0	0	-25	-25	-25	-40	-40	-40	-40	-40	0
KN-6	570546	147753	0	0	-25	-25	-25	-40	-40	-40	-40	-40	0
KN-7	570474	148015	0	0	-20	-20	-20	-40	-40	-40	-40	-40	0
KN-8	570386	148204	0	0	-20	-20	-20	-40	-40	-40	-40	-40	0
KN-13	570484	147525	0	0	-25	-25	-25	-30	-30	-35	60	60	0
KN-14	570633	147547	0	0	-25	-25	-25	-30	-30	-35	60	60	0
KN-15	570776	147624	0	0	-25	-25	-25	-30	-30	-30	60	60	0
KN-17	570496	147345	0	0	-30	-30	-30	-30	-30	60	60	60	0
KN-18	570648	147362	0	0	-30	-30	-30	-30	-30	60	60	60	0
KN-19	570613	148610	0	0	-30	-30	-30	-30	-30	-30	-40	-40	0

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Appendix A 100-KR-4 Alternative 3 Well Flow Rate Summary

WellName	Easting	Northing	Jan2011-D	Jan2012-D	Jan2013-D	Jan2014-D	Jan2015-D	Jan2016-D	Jan2017-D	Jan2018-D	Jan2019-D	Jan2020-D	Jan2021-Dec2087
KN-20	570549	148562	0	0	-30	-30	-30	-30	-30	-30	-40	-40	0
KN-21	571187	148192	0	0	100	100	100	100	100	80	0	0	0
KN-22	570674	148512	0	0	-30	-30	-30	-30	-30	-30	-40	-40	0
KN-23	570557	148486	0	0	-30	-30	-30	-30	-30	-30	-40	-40	0
KN-16	570601	147037	0	0	-25	-25	-25	100	100	0	0	0	0
KW-2	568593	146749	0	0	-35	-35	-35	-35	-35	-35	-35	-35	0
KW-3	568666	146789	0	0	-35	-35	-35	-35	-35	-35	-35	-35	0
KW-4	568752	146839	0	0	-35	-35	-35	-35	-35	-35	-35	-35	0
Extraction Well GPM				-880	-2420	-2420	-2420	-2465	-2285	-2105	-1910	-1910	0
Injection Well GPM				880	2420	2420	2420	2465	2285	2105	1910	1910	0
Number of Extraction Wells				34	88	88	88	77	72	66	57	57	0
Number of Injection Wells				17	28	28	28	31	29	29	33	33	0
Average Extraction GPM				-26	-28	-28	-28	-32	-32	-32	-34	-34	0
Average Injection GPM				52	86	86	86	80	79	73	58	58	0