

**This document was too large to scan
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been divided into smaller sections.**

SECTION 3 OF 3

Document Information			
Document #	DOE/RL-2004-24	Revision	DRAFT A
Title	FEASIBILITY STUDY FOR THE 200-CW-5 (U-POND/Z-DITCHES COOLING WATER WASTE GROUP) & 200-CW-2 (S-POND & DITCHES COOLING WATER WASTE GROUP) & 200-CW-4 (T-POND & DITCHES COOLING WATER WASTE GROUP) & 200-SC-1 (STEAM CONDENSATE WASTE GROUP) OU [DRAFT A REISSUE]		
Date	10/01/2004		
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Keywords			
Projects			
Other Information	Pages D-128 thru E-20		

Table D-1. (Alternative 2), 216-U-10 Pond Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
FLUOR HANFORD COST											
IMPLEMENT INSTITUTIONAL CONTROLS											
Prepare Institutional Controls	200	hr			\$56.00		\$0	\$0	\$11,200	\$0	\$11,200
Fluor Hanford Field Cost							\$0	\$0	\$11,200	\$0	\$11,200
Fluor Hanford G & A on Labor Cost @	15%							\$1,680		\$1,680	
Fluor Hanford G & A on Material Cost @	15%						\$0			\$0	
Fluor Hanford G & A on Equipment Cost @	15%								\$0	\$0	
Fluor Hanford Total Cost							\$0	\$0	\$12,880	\$0	\$12,880
Contingency on Total Field Costs @	25%									\$3,220	
TOTAL COST											\$16,100

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Table D-2. (Alternative 2), 216-U-10 Pond Representative Site,
 Periodic Cost 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State.

Item	Item Cost			Notes
	Annually	per 5 Years	per 30 Years	
Existing Cover Inspection	\$23,520			Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 1,306,500 ft ² .
Radiation Survey of surface soil	\$261,000			Cost is based on \$1,000 for every 5,000 square feet (Site = 1,306,500 ft ²)
Existing Cover Maintenance	\$143,481			Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Vadose Zone Monitoring		\$3,750	\$7,130	Monitoring occurs once every 5 years at a cost of \$75/lf of borehole. Bore hole replacement occurs once every 30 years (refer to calculation sheet, Table D-4).
Reporting	\$10,000			Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000		Prepare Site Condition Report every 5 years.
TOTALS	\$438,001	\$23,750	\$7,130	

Table D-3. (Alternative 2), 216-U-10 Pond Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$16,100		\$16,100	1.0000	\$16,100
1		\$438,001	\$438,001	0.9690	\$424,423
2		\$438,001	\$438,001	0.9389	\$411,239
3		\$438,001	\$438,001	0.9098	\$398,493
4		\$438,001	\$438,001	0.8816	\$386,142
5		\$461,751	\$461,751	0.8543	\$394,474
6		\$438,001	\$438,001	0.8278	\$362,577
7		\$438,001	\$438,001	0.8021	\$351,321
8		\$438,001	\$438,001	0.7773	\$340,458
9		\$438,001	\$438,001	0.7532	\$329,903
10		\$461,751	\$461,751	0.7298	\$336,986
11		\$438,001	\$438,001	0.7072	\$309,754
12		\$438,001	\$438,001	0.6852	\$300,118
13		\$438,001	\$438,001	0.6640	\$290,833
14		\$438,001	\$438,001	0.6434	\$281,810
15		\$461,751	\$461,751	0.6235	\$287,902
16		\$438,001	\$438,001	0.6041	\$264,597
17		\$438,001	\$438,001	0.5854	\$256,406
18		\$438,001	\$438,001	0.5672	\$248,434
19		\$438,001	\$438,001	0.5496	\$240,725
20		\$461,751	\$461,751	0.5326	\$245,929
21		\$438,001	\$438,001	0.5161	\$226,052
22		\$438,001	\$438,001	0.5001	\$219,044
23		\$438,001	\$438,001	0.4846	\$212,255
24		\$438,001	\$438,001	0.4696	\$205,685
25		\$461,751	\$461,751	0.4550	\$210,097
26		\$438,001	\$438,001	0.4409	\$193,115
27		\$438,001	\$438,001	0.4272	\$187,114
28		\$438,001	\$438,001	0.4140	\$181,332
29		\$438,001	\$438,001	0.4011	\$175,682
30		\$468,881	\$468,881	0.3887	\$182,254
31		\$438,001	\$438,001	0.3766	\$164,951
32		\$438,001	\$438,001	0.3650	\$159,870
33		\$438,001	\$438,001	0.3536	\$154,877
34		\$438,001	\$438,001	0.3427	\$150,103
35		\$461,751	\$461,751	0.3321	\$153,348
36		\$438,001	\$438,001	0.3218	\$140,949
37		\$438,001	\$438,001	0.3118	\$136,569
38		\$438,001	\$438,001	0.3021	\$132,320
39		\$438,001	\$438,001	0.2927	\$128,203
40		\$461,751	\$461,751	0.2837	\$130,999
41		\$438,001	\$438,001	0.2749	\$120,407
42		\$438,001	\$438,001	0.2664	\$116,684
43		\$438,001	\$438,001	0.2581	\$113,048
44		\$438,001	\$438,001	0.2501	\$109,544
45		\$461,751	\$461,751	0.2423	\$111,882

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Table D-3. (Alternative 2), 216-U-10 Pond Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
46		\$438,001	\$438,001	0.2348	\$102,843
47		\$438,001	\$438,001	0.2275	\$99,645
48		\$438,001	\$438,001	0.2205	\$96,579
49		\$438,001	\$438,001	0.2136	\$93,557
50		\$461,751	\$461,751	0.2070	\$95,582
51		\$438,001	\$438,001	0.2006	\$87,863
52		\$438,001	\$438,001	0.1944	\$85,147
53		\$438,001	\$438,001	0.1884	\$82,519
54		\$438,001	\$438,001	0.1825	\$79,935
55		\$461,751	\$461,751	0.1769	\$81,684
56		\$438,001	\$438,001	0.1714	\$75,073
57		\$438,001	\$438,001	0.1661	\$72,752
58		\$438,001	\$438,001	0.1609	\$70,474
59		\$438,001	\$438,001	0.1559	\$68,284
60		\$468,881	\$468,881	0.1511	\$70,848
61		\$438,001	\$438,001	0.1464	\$64,123
62		\$438,001	\$438,001	0.1419	\$62,152
63		\$438,001	\$438,001	0.1375	\$60,225
64		\$438,001	\$438,001	0.1332	\$58,342
65		\$461,751	\$461,751	0.1291	\$59,612
66		\$438,001	\$438,001	0.1251	\$54,794
67		\$438,001	\$438,001	0.1212	\$53,086
68		\$438,001	\$438,001	0.1174	\$51,421
69		\$438,001	\$438,001	0.1138	\$49,845
70		\$461,751	\$461,751	0.1103	\$50,931
71		\$438,001	\$438,001	0.1068	\$46,779
72		\$438,001	\$438,001	0.1035	\$45,333
73		\$438,001	\$438,001	0.1003	\$43,932
74		\$438,001	\$438,001	0.0972	\$42,574
75		\$461,751	\$461,751	0.0942	\$43,497
76		\$438,001	\$438,001	0.0913	\$39,990
77		\$438,001	\$438,001	0.0884	\$38,719
78		\$438,001	\$438,001	0.0857	\$37,537
79		\$438,001	\$438,001	0.0830	\$36,354
80		\$461,751	\$461,751	0.0805	\$37,171
81		\$438,001	\$438,001	0.0780	\$34,164
82		\$438,001	\$438,001	0.0756	\$33,113
83		\$438,001	\$438,001	0.0732	\$32,062
84		\$438,001	\$438,001	0.0709	\$31,054
85		\$461,751	\$461,751	0.0687	\$31,722
86		\$438,001	\$438,001	0.0666	\$29,171
87		\$438,001	\$438,001	0.0645	\$28,251
88		\$438,001	\$438,001	0.0625	\$27,375
89		\$438,001	\$438,001	0.0606	\$26,543
90		\$468,881	\$468,881	0.0587	\$27,523
91		\$438,001	\$438,001	0.0569	\$24,922
92		\$438,001	\$438,001	0.0551	\$24,134

Table D-3. (Alternative 2), 216-U-10 Pond Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
93		\$438,001	\$438,001	0.0534	\$23,389
94		\$438,001	\$438,001	0.0518	\$22,688
95		\$461,751	\$461,751	0.0502	\$23,180
96		\$438,001	\$438,001	0.0486	\$21,287
97		\$438,001	\$438,001	0.0471	\$20,630
98		\$438,001	\$438,001	0.0456	\$19,973
99		\$438,001	\$438,001	0.0442	\$19,360
100		\$461,751	\$461,751	0.0429	\$19,809
101		\$438,001	\$438,001	0.0415	\$18,177
102		\$438,001	\$438,001	0.0402	\$17,608
103		\$438,001	\$438,001	0.0390	\$17,082
104		\$438,001	\$438,001	0.0378	\$16,556
105		\$461,751	\$461,751	0.0366	\$16,900
106		\$438,001	\$438,001	0.0355	\$15,549
107		\$438,001	\$438,001	0.0344	\$15,067
108		\$438,001	\$438,001	0.0333	\$14,585
109		\$438,001	\$438,001	0.0323	\$14,147
110		\$461,751	\$461,751	0.0313	\$14,453
111		\$438,001	\$438,001	0.0303	\$13,271
112		\$438,001	\$438,001	0.0294	\$12,877
113		\$438,001	\$438,001	0.0285	\$12,483
114		\$438,001	\$438,001	0.0276	\$12,089
115		\$461,751	\$461,751	0.0267	\$12,329
116		\$438,001	\$438,001	0.0259	\$11,344
117		\$438,001	\$438,001	0.0251	\$10,994
118		\$438,001	\$438,001	0.0243	\$10,643
119		\$438,001	\$438,001	0.0236	\$10,337
120		\$468,881	\$468,881	0.0228	\$10,690
121		\$438,001	\$438,001	0.0221	\$9,680
122		\$438,001	\$438,001	0.0214	\$9,373
123		\$438,001	\$438,001	0.0208	\$9,110
124		\$438,001	\$438,001	0.0201	\$8,804
125		\$461,751	\$461,751	0.0195	\$9,004
126		\$438,001	\$438,001	0.0189	\$8,278
127		\$438,001	\$438,001	0.0183	\$8,015
128		\$438,001	\$438,001	0.0177	\$7,753
129		\$438,001	\$438,001	0.0172	\$7,534
130		\$461,751	\$461,751	0.0167	\$7,711
131		\$438,001	\$438,001	0.0161	\$7,052
132		\$438,001	\$438,001	0.0156	\$6,833
133		\$438,001	\$438,001	0.0152	\$6,658
134		\$438,001	\$438,001	0.0147	\$6,439
135		\$461,751	\$461,751	0.0142	\$6,557
136		\$438,001	\$438,001	0.0138	\$6,044
137		\$438,001	\$438,001	0.0134	\$5,869
138		\$438,001	\$438,001	0.0129	\$5,650
139		\$438,001	\$438,001	0.0125	\$5,475

Table D-3. (Alternative 2), 216-U-10 Pond Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
140		\$461,751	\$461,751	0.0122	\$5,633
141		\$438,001	\$438,001	0.0118	\$5,168
142		\$438,001	\$438,001	0.0114	\$4,993
143		\$438,001	\$438,001	0.0111	\$4,862
144		\$438,001	\$438,001	0.0107	\$4,687
145		\$461,751	\$461,751	0.0104	\$4,802
146		\$438,001	\$438,001	0.0101	\$4,424
147		\$438,001	\$438,001	0.0098	\$4,292
148		\$438,001	\$438,001	0.0094	\$4,117
149		\$438,001	\$438,001	0.0092	\$4,030
150		\$461,751	\$461,751	0.0089	\$4,110
NON-DISCOUNTED COST		\$66,457,299	TOTAL PRESENT WORTH		\$13,724,706

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where $e = 3.2\%$ and $n =$ year (1 - 150).

Table D-4. (Alternative 2), 216-U-10 Pond Representative Site, Calculation Sheet
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Items	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Purchase, Deliver, and Place Topsoil											
Purchase Pea Gravel (Purchase and Delivery)	968.0	cy		\$55.67			\$0	\$53,889	\$0	\$0	\$53,889
Silt Loam, Excavate/Load (8,712 cy)	7	day			\$592.00	\$1,190.17	\$0	\$0	\$4,144	\$8,331	\$12,475
Silt Loam Hauling, (5 trucks 7 days each)	35	day			\$296.00	\$398.55	\$0	\$0	\$10,360	\$13,949	\$24,309
Equipment Mob/Demob	9	ea			\$100.00	\$352.00	\$0	\$0	\$900	\$3,168	\$4,068
Silt Loam/Pea Gravel Layer, Front End Loader	7	day			\$296.00	\$630.27	\$0	\$0	\$2,072	\$4,412	\$6,484
Silt Loam/Pea Gravel Layer, Bulldozer w/ Tiller	7	day			\$296.00	\$951.52	\$0	\$0	\$2,072	\$6,661	\$8,733
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	14,520	sy		\$0.26	\$1.19	\$0.18	\$0	\$3,775	\$17,279	\$2,614	\$23,668
Oversight (8 hrs/day)	22	days			\$448.00		\$0	\$0	\$9,856	\$0	\$9,856
Total Cost							\$0	\$57,664	\$46,683	\$39,135	\$143,481

Drill Vados Zone Borehole (cost occurs every 30 years)											
Mobilize/Demobilize Drill Rig	1	ls			\$625.00	\$1,875.00	\$0	\$0	\$625	\$1,875	\$2,500
Borehole Installation	50	lf			\$8.77	\$36.23	\$0	\$0	\$439	\$1,811	\$2,250
Decontamination of Drill Rig	1	ls	\$1,000.00				\$1,000	\$0	\$0	\$0	\$1,000
Collect/containerize IDW	1	ea	\$50.00				\$50	\$0	\$0	\$0	\$50
Characterize IDW	1	ea	\$700.00				\$700	\$0	\$0	\$0	\$700
Transport/Dispose IDW Off-site	1	drum	\$150.00				\$150	\$0	\$0	\$0	\$150
Oversight (Inc. Sampling, Labor, and Equipment)	8	hrs			\$56.00		\$0	\$0	\$448	\$0	\$448
PPE (1 p * 1 day)	1	day		\$31.67			\$0	\$32	\$0	\$0	\$32
Total Cost							\$1,900	\$32	\$1,512	\$3,686	\$7,130

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Table D-5. (Alternative 2), 216-U-14 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
FLUOR HANFORD COST											
IMPLEMENT INSTITUTIONAL CONTROLS											
Prepare Institutional Controls	200	hr			\$56.00		\$0	\$0	\$11,200	\$0	\$11,200
Fluor Hanford Field Cost							\$0	\$0	\$11,200	\$0	\$11,200
Fluor Hanford G & A on Labor Cost @	15%							\$1,680		\$1,680	
Fluor Hanford G & A on Material Cost @	15%						\$0			\$0	
Fluor Hanford G & A on Equipment Cost @	15%								\$0	\$0	
Fluor Hanford Total Cost							\$0	\$0	\$12,880	\$0	\$12,880
Contingency on Total Field Costs @	25%									\$3,220	
TOTAL COST											\$16,100

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Table D-6. (Alternative 2), 216-U-14 Ditch Representative Site, Periodic Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Item Cost			Notes
	Annually	per 5Years	per 30 Years	
Existing Cover Inspection	\$448			Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 22,800 ft ² .
Radiation Survey of surface soil	\$5,000			Cost is based on \$1,000 for every 5,000 square feet (Site = 22,800 ft ²)
Existing Cover Maintenance	\$7,787			Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Vadose Zone Monitoring		\$3,750	\$7,130	Monitoring occurs once every 5 years at a cost of \$75/lf of borehole. Bore hole replacement occurs once every 30 years (refer to calculation sheet, Table D-4).
Reporting	\$10,000			Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000		Prepare Site Condition Report every 5 years.
TOTALS	\$23,235	\$23,750	\$7,130	

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Table D-7. (Alternative 2), 216-U-14 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$16,100		\$16,100	1.0000	\$16,100
1		\$23,235	\$23,235	0.9690	\$22,515
2		\$23,235	\$23,235	0.9389	\$21,815
3		\$23,235	\$23,235	0.9098	\$21,139
4		\$23,235	\$23,235	0.8816	\$20,484
5		\$46,985	\$46,985	0.8543	\$40,139
6		\$23,235	\$23,235	0.8278	\$19,234
7		\$23,235	\$23,235	0.8021	\$18,637
8		\$23,235	\$23,235	0.7773	\$18,061
9		\$23,235	\$23,235	0.7532	\$17,501
10		\$46,985	\$46,985	0.7298	\$34,290
11		\$23,235	\$23,235	0.7072	\$16,432
12		\$23,235	\$23,235	0.6852	\$15,921
13		\$23,235	\$23,235	0.6640	\$15,428
14		\$23,235	\$23,235	0.6434	\$14,949
15		\$46,985	\$46,985	0.6235	\$29,295
16		\$23,235	\$23,235	0.6041	\$14,036
17		\$23,235	\$23,235	0.5854	\$13,602
18		\$23,235	\$23,235	0.5672	\$13,179
19		\$23,235	\$23,235	0.5496	\$12,770
20		\$46,985	\$46,985	0.5326	\$25,024
21		\$23,235	\$23,235	0.5161	\$11,992
22		\$23,235	\$23,235	0.5001	\$11,620
23		\$23,235	\$23,235	0.4846	\$11,260
24		\$23,235	\$23,235	0.4696	\$10,911
25		\$46,985	\$46,985	0.4550	\$21,378
26		\$23,235	\$23,235	0.4409	\$10,244
27		\$23,235	\$23,235	0.4272	\$9,926
28		\$23,235	\$23,235	0.4140	\$9,619
29		\$23,235	\$23,235	0.4011	\$9,320
30		\$54,115	\$54,115	0.3887	\$21,034
31		\$23,235	\$23,235	0.3766	\$8,750
32		\$23,235	\$23,235	0.3650	\$8,481
33		\$23,235	\$23,235	0.3536	\$8,216
34		\$23,235	\$23,235	0.3427	\$7,963
35		\$46,985	\$46,985	0.3321	\$15,604
36		\$23,235	\$23,235	0.3218	\$7,477
37		\$23,235	\$23,235	0.3118	\$7,245
38		\$23,235	\$23,235	0.3021	\$7,019
39		\$23,235	\$23,235	0.2927	\$6,801
40		\$46,985	\$46,985	0.2837	\$13,330
41		\$23,235	\$23,235	0.2749	\$6,387
42		\$23,235	\$23,235	0.2664	\$6,190

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Table D-7. (Alternative 2), 216-U-14 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
43		\$23,235	\$23,235	0.2581	\$5,997
44		\$23,235	\$23,235	0.2501	\$5,811
45		\$46,985	\$46,985	0.2423	\$11,384
46		\$23,235	\$23,235	0.2348	\$5,456
47		\$23,235	\$23,235	0.2275	\$5,286
48		\$23,235	\$23,235	0.2205	\$5,123
49		\$23,235	\$23,235	0.2136	\$4,963
50		\$46,985	\$46,985	0.2070	\$9,726
51		\$23,235	\$23,235	0.2006	\$4,661
52		\$23,235	\$23,235	0.1944	\$4,517
53		\$23,235	\$23,235	0.1884	\$4,377
54		\$23,235	\$23,235	0.1825	\$4,240
55		\$46,985	\$46,985	0.1769	\$8,312
56		\$23,235	\$23,235	0.1714	\$3,982
57		\$23,235	\$23,235	0.1661	\$3,859
58		\$23,235	\$23,235	0.1609	\$3,739
59		\$23,235	\$23,235	0.1559	\$3,622
60		\$54,115	\$54,115	0.1511	\$8,177
61		\$23,235	\$23,235	0.1464	\$3,402
62		\$23,235	\$23,235	0.1419	\$3,297
63		\$23,235	\$23,235	0.1375	\$3,195
64		\$23,235	\$23,235	0.1332	\$3,095
65		\$46,985	\$46,985	0.1291	\$6,066
66		\$23,235	\$23,235	0.1251	\$2,907
67		\$23,235	\$23,235	0.1212	\$2,816
68		\$23,235	\$23,235	0.1174	\$2,728
69		\$23,235	\$23,235	0.1138	\$2,644
70		\$46,985	\$46,985	0.1103	\$5,182
71		\$23,235	\$23,235	0.1068	\$2,482
72		\$23,235	\$23,235	0.1035	\$2,405
73		\$23,235	\$23,235	0.1003	\$2,330
74		\$23,235	\$23,235	0.0972	\$2,258
75		\$46,985	\$46,985	0.0942	\$4,426
76		\$23,235	\$23,235	0.0913	\$2,121
77		\$23,235	\$23,235	0.0884	\$2,054
78		\$23,235	\$23,235	0.0857	\$1,991
79		\$23,235	\$23,235	0.0830	\$1,929
80		\$46,985	\$46,985	0.0805	\$3,782
81		\$23,235	\$23,235	0.0780	\$1,812
82		\$23,235	\$23,235	0.0756	\$1,757
83		\$23,235	\$23,235	0.0732	\$1,701
84		\$23,235	\$23,235	0.0709	\$1,647
85		\$46,985	\$46,985	0.0687	\$3,228
86		\$23,235	\$23,235	0.0666	\$1,547

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Table D-7. (Alternative 2), 216-U-14 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
87		\$23,235	\$23,235	0.0645	\$1,499
88		\$23,235	\$23,235	0.0625	\$1,452
89		\$23,235	\$23,235	0.0606	\$1,408
90		\$54,115	\$54,115	0.0587	\$3,177
91		\$23,235	\$23,235	0.0569	\$1,322
92		\$23,235	\$23,235	0.0551	\$1,280
93		\$23,235	\$23,235	0.0534	\$1,241
94		\$23,235	\$23,235	0.0518	\$1,204
95		\$46,985	\$46,985	0.0502	\$2,359
96		\$23,235	\$23,235	0.0486	\$1,129
97		\$23,235	\$23,235	0.0471	\$1,094
98		\$23,235	\$23,235	0.0456	\$1,060
99		\$23,235	\$23,235	0.0442	\$1,027
100		\$46,985	\$46,985	0.0429	\$2,016
101		\$23,235	\$23,235	0.0415	\$964
102		\$23,235	\$23,235	0.0402	\$934
103		\$23,235	\$23,235	0.0390	\$906
104		\$23,235	\$23,235	0.0378	\$878
105		\$46,985	\$46,985	0.0366	\$1,720
106		\$23,235	\$23,235	0.0355	\$825
107		\$23,235	\$23,235	0.0344	\$799
108		\$23,235	\$23,235	0.0333	\$774
109		\$23,235	\$23,235	0.0323	\$750
110		\$46,985	\$46,985	0.0313	\$1,471
111		\$23,235	\$23,235	0.0303	\$704
112		\$23,235	\$23,235	0.0294	\$683
113		\$23,235	\$23,235	0.0285	\$662
114		\$23,235	\$23,235	0.0276	\$641
115		\$46,985	\$46,985	0.0267	\$1,255
116		\$23,235	\$23,235	0.0259	\$602
117		\$23,235	\$23,235	0.0251	\$583
118		\$23,235	\$23,235	0.0243	\$565
119		\$23,235	\$23,235	0.0236	\$548
120		\$54,115	\$54,115	0.0228	\$1,234
121		\$23,235	\$23,235	0.0221	\$513
122		\$23,235	\$23,235	0.0214	\$497
123		\$23,235	\$23,235	0.0208	\$483
124		\$23,235	\$23,235	0.0201	\$467
125		\$46,985	\$46,985	0.0195	\$916
126		\$23,235	\$23,235	0.0189	\$439
127		\$23,235	\$23,235	0.0183	\$425
128		\$23,235	\$23,235	0.0177	\$411
129		\$23,235	\$23,235	0.0172	\$400
130		\$46,985	\$46,985	0.0167	\$785

Table D-7. (Alternative 2), 216-U-14 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
131		\$23,235	\$23,235	0.0161	\$374
132		\$23,235	\$23,235	0.0156	\$362
133		\$23,235	\$23,235	0.0152	\$353
134		\$23,235	\$23,235	0.0147	\$342
135		\$46,985	\$46,985	0.0142	\$667
136		\$23,235	\$23,235	0.0138	\$321
137		\$23,235	\$23,235	0.0134	\$311
138		\$23,235	\$23,235	0.0129	\$300
139		\$23,235	\$23,235	0.0125	\$290
140		\$46,985	\$46,985	0.0122	\$573
141		\$23,235	\$23,235	0.0118	\$274
142		\$23,235	\$23,235	0.0114	\$265
143		\$23,235	\$23,235	0.0111	\$258
144		\$23,235	\$23,235	0.0107	\$249
145		\$46,985	\$46,985	0.0104	\$489
146		\$23,235	\$23,235	0.0101	\$235
147		\$23,235	\$23,235	0.0098	\$228
148		\$23,235	\$23,235	0.0094	\$218
149		\$23,235	\$23,235	0.0092	\$214
150		\$46,985	\$46,985	0.0089	\$418
NON-DISCOUNTED COST		\$4,242,372	TOTAL PRESENT WORTH		\$878,195

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where $e = 3.2\%$ and $n =$ year (1 - 150).

Table D-8. (Alternative 2), 216-U-14 Ditch Representative Site, Calculation Sheet
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Items	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Purchase, Deliver, and Place Topsoil											
Purchase Pea Gravel (Purchase and Delivery)	17.0	cy		\$55.67			\$0	\$946	\$0	\$0	\$946
Silt Loam, Excavate/Load (153 cy)	1	day			\$296.00	\$559.90	\$0	\$0	\$296	\$560	\$856
Silt Loam Hauling, 1 Truck	1	day			\$296.00	\$398.55	\$0	\$0	\$296	\$399	\$695
Equipment Mob/Demob	4	ea			\$100.00	\$352.00	\$0	\$0	\$400	\$1,408	\$1,808
Silt Loam/Pea Gravel Layer, Front End Loader	1	day			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Silt Loam/Pea Gravel Layer, Bulldozer w/ Tiller	1	day			\$296.00	\$951.52	\$0	\$0	\$296	\$952	\$1,248
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	253	sy		\$0.26	\$1.19	\$0.18	\$0	\$66	\$301	\$46	\$412
Oversight (8 hrs/day)	2	day			\$448.00		\$0	\$0	\$896	\$0	\$896
Total Cost							\$0	\$1,012	\$2,781	\$3,994	\$7,787

Drill Vados Zone Borehole cost occurs every 30 years)											
Mobilize/Demobilize Drill Rig	1	ls			\$625.00	\$1,875.00	\$0	\$0	\$625	\$1,875	\$2,500
Borehole Installation	50	lf			\$8.77	\$36.23	\$0	\$0	\$439	\$1,811	\$2,250
Decontamination of Drill Rig	1	ls	\$1,000.00				\$1,000	\$0	\$0	\$0	\$1,000
Collect/containerize IDW	1	ea	\$50.00				\$50	\$0	\$0	\$0	\$50
Characterize IDW	1	ea	\$700.00				\$700	\$0	\$0	\$0	\$700
Transport/Dispose IDW Off-site	1	drum	\$150.00				\$150	\$0	\$0	\$0	\$150
Oversight (Inc. Sampling, Labor, and Equipment)	8	hrs			\$56.00		\$0	\$0	\$448	\$0	\$448
PPE (1 p * 1 day)	1	day		\$31.67			\$0	\$32	\$0	\$0	\$32
Total Cost							\$1,900	\$32	\$1,512	\$3,686	\$7,130

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Table D-9. (Alternative 2), 216-Z-11 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
FLUOR HANFORD COST											
IMPLEMENT INSTITUTIONAL CONTROLS											
Prepare Institutional Controls	200	hr			\$56.00		\$0	\$0	\$11,200	\$0	\$11,200
Fluor Hanford Field Cost							\$0	\$0	\$11,200	\$0	\$11,200
Fluor Hanford G & A on Labor Cost @	15%							\$1,680		\$1,680	
Fluor Hanford G & A on Material Cost @	15%						\$0			\$0	
Fluor Hanford G & A on Equipment Cost @	15%								\$0	\$0	
Fluor Hanford Total Cost							\$0	\$0	\$12,880	\$0	\$12,880
Contingency on Total Field Costs @	25%									\$3,220	
TOTAL COST											\$16,100

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Table D-10. (Alternative 2), 216-Z-11 Ditch Representative Site, Periodic Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Item Cost			Notes
	Annually	per 5 Years	per 30 Years	
Existing Cover Inspection	\$1,344			Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 72,900 ft ² .
Radiation Survey of surface soil	\$15,000			Cost is based on \$1,000 for every 5,000 square feet (Site = 72,900 ft ²)
Existing Cover Maintenance	\$14,927			Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Vadose Zone Monitoring		\$3,750	\$7,130	Monitoring occurs once every 5 years at a cost of \$75/lf of borehole. Bore hole replacement occurs once every 30 years (refer to calculation sheet, Table D-4).
Reporting	\$10,000			Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000		Prepare Site Condition Report every 5 years.

TOTALS	\$41,271	\$23,750	\$7,130
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Table D-11 (Alternative 2), 216-Z-11 Ditch Representative Site,
 Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (4 pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$16,100		\$16,100	1.0000	\$16,100
1		\$41,271	\$41,271	0.9690	\$39,992
2		\$41,271	\$41,271	0.9389	\$38,749
3		\$41,271	\$41,271	0.9098	\$37,548
4		\$41,271	\$41,271	0.8816	\$36,384
5		\$65,021	\$65,021	0.8543	\$55,547
6		\$41,271	\$41,271	0.8278	\$34,164
7		\$41,271	\$41,271	0.8021	\$33,103
8		\$41,271	\$41,271	0.7773	\$32,080
9		\$41,271	\$41,271	0.7532	\$31,085
10		\$65,021	\$65,021	0.7298	\$47,452
11		\$41,271	\$41,271	0.7072	\$29,187
12		\$41,271	\$41,271	0.6852	\$28,279
13		\$41,271	\$41,271	0.6640	\$27,404
14		\$41,271	\$41,271	0.6434	\$26,554
15		\$65,021	\$65,021	0.6235	\$40,541
16		\$41,271	\$41,271	0.6041	\$24,932
17		\$41,271	\$41,271	0.5854	\$24,160
18		\$41,271	\$41,271	0.5672	\$23,409
19		\$41,271	\$41,271	0.5496	\$22,683
20		\$65,021	\$65,021	0.5326	\$34,630
21		\$41,271	\$41,271	0.5161	\$21,300
22		\$41,271	\$41,271	0.5001	\$20,640
23		\$41,271	\$41,271	0.4846	\$20,000
24		\$41,271	\$41,271	0.4696	\$19,381
25		\$65,021	\$65,021	0.4550	\$29,585
26		\$41,271	\$41,271	0.4409	\$18,196
27		\$41,271	\$41,271	0.4272	\$17,631
28		\$41,271	\$41,271	0.4140	\$17,086
29		\$41,271	\$41,271	0.4011	\$16,554
30		\$72,151	\$72,151	0.3887	\$28,045
31		\$41,271	\$41,271	0.3766	\$15,543
32		\$41,271	\$41,271	0.3650	\$15,064
33		\$41,271	\$41,271	0.3536	\$14,593
34		\$41,271	\$41,271	0.3427	\$14,144
35		\$65,021	\$65,021	0.3321	\$21,593
36		\$41,271	\$41,271	0.3218	\$13,281
37		\$41,271	\$41,271	0.3118	\$12,868
38		\$41,271	\$41,271	0.3021	\$12,468
39		\$41,271	\$41,271	0.2927	\$12,080
40		\$65,021	\$65,021	0.2837	\$18,446

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Table D-11 (Alternative 2), 216-Z-11 Ditch Representative Site,
 Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (4 pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
41		\$41,271	\$41,271	0.2749	\$11,345
42		\$41,271	\$41,271	0.2664	\$10,995
43		\$41,271	\$41,271	0.2581	\$10,652
44		\$41,271	\$41,271	0.2501	\$10,322
45		\$65,021	\$65,021	0.2423	\$15,755
46		\$41,271	\$41,271	0.2348	\$9,690
47		\$41,271	\$41,271	0.2275	\$9,389
48		\$41,271	\$41,271	0.2205	\$9,100
49		\$41,271	\$41,271	0.2136	\$8,815
50		\$65,021	\$65,021	0.2070	\$13,459
51		\$41,271	\$41,271	0.2006	\$8,279
52		\$41,271	\$41,271	0.1944	\$8,023
53		\$41,271	\$41,271	0.1884	\$7,775
54		\$41,271	\$41,271	0.1825	\$7,532
55		\$65,021	\$65,021	0.1769	\$11,502
56		\$41,271	\$41,271	0.1714	\$7,074
57		\$41,271	\$41,271	0.1661	\$6,855
58		\$41,271	\$41,271	0.1609	\$6,640
59		\$41,271	\$41,271	0.1559	\$6,434
60		\$72,151	\$72,151	0.1511	\$10,902
61		\$41,271	\$41,271	0.1464	\$6,042
62		\$41,271	\$41,271	0.1419	\$5,856
63		\$41,271	\$41,271	0.1375	\$5,675
64		\$41,271	\$41,271	0.1332	\$5,497
65		\$65,021	\$65,021	0.1291	\$8,394
66		\$41,271	\$41,271	0.1251	\$5,163
67		\$41,271	\$41,271	0.1212	\$5,002
68		\$41,271	\$41,271	0.1174	\$4,845
69		\$41,271	\$41,271	0.1138	\$4,697
70		\$65,021	\$65,021	0.1103	\$7,172
71		\$41,271	\$41,271	0.1068	\$4,408
72		\$41,271	\$41,271	0.1035	\$4,272
73		\$41,271	\$41,271	0.1003	\$4,139
74		\$41,271	\$41,271	0.0972	\$4,012
75		\$65,021	\$65,021	0.0942	\$6,125
76		\$41,271	\$41,271	0.0913	\$3,768
77		\$41,271	\$41,271	0.0884	\$3,648
78		\$41,271	\$41,271	0.0857	\$3,537
79		\$41,271	\$41,271	0.0830	\$3,425
80		\$65,021	\$65,021	0.0805	\$5,234
81		\$41,271	\$41,271	0.0780	\$3,219
82		\$41,271	\$41,271	0.0756	\$3,120

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Table D-11 (Alternative 2), 216-Z-11 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
83		\$41,271	\$41,271	0.0732	\$3,021
84		\$41,271	\$41,271	0.0709	\$2,926
85		\$65,021	\$65,021	0.0687	\$4,467
86		\$41,271	\$41,271	0.0666	\$2,749
87		\$41,271	\$41,271	0.0645	\$2,662
88		\$41,271	\$41,271	0.0625	\$2,579
89		\$41,271	\$41,271	0.0606	\$2,501
90		\$72,151	\$72,151	0.0587	\$4,235
91		\$41,271	\$41,271	0.0569	\$2,348
92		\$41,271	\$41,271	0.0551	\$2,274
93		\$41,271	\$41,271	0.0534	\$2,204
94		\$41,271	\$41,271	0.0518	\$2,138
95		\$65,021	\$65,021	0.0502	\$3,264
96		\$41,271	\$41,271	0.0486	\$2,006
97		\$41,271	\$41,271	0.0471	\$1,944
98		\$41,271	\$41,271	0.0456	\$1,882
99		\$41,271	\$41,271	0.0442	\$1,824
100		\$65,021	\$65,021	0.0429	\$2,789
101		\$41,271	\$41,271	0.0415	\$1,713
102		\$41,271	\$41,271	0.0402	\$1,659
103		\$41,271	\$41,271	0.0390	\$1,610
104		\$41,271	\$41,271	0.0378	\$1,560
105		\$65,021	\$65,021	0.0366	\$2,380
106		\$41,271	\$41,271	0.0355	\$1,465
107		\$41,271	\$41,271	0.0344	\$1,420
108		\$41,271	\$41,271	0.0333	\$1,374
109		\$41,271	\$41,271	0.0323	\$1,333
110		\$65,021	\$65,021	0.0313	\$2,035
111		\$41,271	\$41,271	0.0303	\$1,251
112		\$41,271	\$41,271	0.0294	\$1,213
113		\$41,271	\$41,271	0.0285	\$1,176
114		\$41,271	\$41,271	0.0276	\$1,139
115		\$65,021	\$65,021	0.0267	\$1,736
116		\$41,271	\$41,271	0.0259	\$1,069
117		\$41,271	\$41,271	0.0251	\$1,036
118		\$41,271	\$41,271	0.0243	\$1,003
119		\$41,271	\$41,271	0.0236	\$974
120		\$72,151	\$72,151	0.0228	\$1,645
121		\$41,271	\$41,271	0.0221	\$912
122		\$41,271	\$41,271	0.0214	\$883
123		\$41,271	\$41,271	0.0208	\$858
124		\$41,271	\$41,271	0.0201	\$830

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Table D-11 (Alternative 2), 216-Z-11 Ditch Representative Site,
 Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (4 pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
125		\$65,021	\$65,021	0.0195	\$1,268
126		\$41,271	\$41,271	0.0189	\$780
127		\$41,271	\$41,271	0.0183	\$755
128		\$41,271	\$41,271	0.0177	\$730
129		\$41,271	\$41,271	0.0172	\$710
130		\$65,021	\$65,021	0.0167	\$1,086
131		\$41,271	\$41,271	0.0161	\$664
132		\$41,271	\$41,271	0.0156	\$644
133		\$41,271	\$41,271	0.0152	\$627
134		\$41,271	\$41,271	0.0147	\$607
135		\$65,021	\$65,021	0.0142	\$923
136		\$41,271	\$41,271	0.0138	\$570
137		\$41,271	\$41,271	0.0134	\$553
138		\$41,271	\$41,271	0.0129	\$532
139		\$41,271	\$41,271	0.0125	\$516
140		\$65,021	\$65,021	0.0122	\$793
141		\$41,271	\$41,271	0.0118	\$487
142		\$41,271	\$41,271	0.0114	\$470
143		\$41,271	\$41,271	0.0111	\$458
144		\$41,271	\$41,271	0.0107	\$442
145		\$65,021	\$65,021	0.0104	\$676
146		\$41,271	\$41,271	0.0101	\$417
147		\$41,271	\$41,271	0.0098	\$404
148		\$41,271	\$41,271	0.0094	\$388
149		\$41,271	\$41,271	0.0092	\$380
150		\$65,021	\$65,021	0.0089	\$579
NON-DISCOUNTED COST		\$6,947,764	TOTAL PRESENT WORTH		\$1,436,820

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where $e = 3.2\%$ and $n =$ year (1 - 150).

Table D-12. (Alternative 2), 216-Z-11 Ditch Representative Site, Calculation Sheet
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Items	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Purchase, Deliver, and Place Topsoil											
Purchase Pea Gravel (Purchase and Delivery)	54	cy		\$55.67			\$0	\$3,006	\$0	\$0	\$3,006
Silt Loam, Excavate/Load (486 cy)	2	day			\$296.00	\$559.90	\$0	\$0	\$592	\$1,120	\$1,712
Silt Loam Hauling, 1 Truck	2	day			\$296.00	\$398.55	\$0	\$0	\$592	\$797	\$1,389
Equipment Mob/Demob	4	ea			\$100.00	\$352.00	\$0	\$0	\$400	\$1,408	\$1,808
Silt Loam/Pea Gravel Layer, Front End Loader	2	day			\$296.00	\$630.27	\$0	\$0	\$592	\$1,261	\$1,853
Silt Loam/Pea Gravel Layer, Bulldozer w/ Tiller	2	day			\$296.00	\$951.52	\$0	\$0	\$592	\$1,903	\$2,495
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	810	sy		\$0.26	\$1.19	\$0.18	\$0	\$211	\$964	\$146	\$1,320
Oversight (8 hrs/day)	3	days			\$448.00		\$0	\$0	\$1,344	\$0	\$1,344
Total Cost							\$0	\$3,217	\$5,076	\$6,634	\$14,927

Drill Vados Zone Borehole cost occurs every 30 years)											
Mobilize/Demobilize Drill Rig	1	ls			\$625.00	\$1,875.00	\$0	\$0	\$625	\$1,875	\$2,500
Borehole Installation	50	lf			\$8.77	\$36.23	\$0	\$0	\$439	\$1,811	\$2,250
Decontamination of Drill Rig	1	ls	\$1,000.00				\$1,000	\$0	\$0	\$0	\$1,000
Collect/containerize IDW	1	ea	\$50.00				\$50	\$0	\$0	\$0	\$50
Characterize IDW	1	ea	\$700.00				\$700	\$0	\$0	\$0	\$700
Transport/Dispose IDW Off-site	1	drum	\$150.00				\$150	\$0	\$0	\$0	\$150
Oversight (Inc. Sampling, Labor, and Equipment)	8	hrs			\$56.00		\$0	\$0	\$448	\$0	\$448
PPE (1 p * 1 day)	1	day		\$31.67			\$0	\$32	\$0	\$0	\$32
Total Cost							\$1,900	\$32	\$1,512	\$3,686	\$7,130

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Table D-13. (Alternative 2), 216-A-25 Gable Mountain Pond Representative Site, Capital Cost
200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
FLUOR HANFORD COST											
IMPLEMENT INSTITUTIONAL CONTROLS											
Prepare Institutional Controls	200	hr			\$56.00		\$0	\$0	\$11,200	\$0	\$11,200
Fluor Hanford Field Cost							\$0	\$0	\$11,200	\$0	\$11,200
Fluor Hanford G & A on Labor Cost @	15%							\$1,680		\$1,680	
Fluor Hanford G & A on Material Cost @	15%						\$0			\$0	
Fluor Hanford G & A on Equipment Cost @	15%								\$0	\$0	
Fluor Hanford Total Cost							\$0	\$0	\$12,880	\$0	\$12,880
Contingency on Total Field Costs @	25%									\$3,220	
TOTAL COST										\$16,100	

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Table D-14. (Alternative 2), 216-A-25 Gable Mountain Pond Representative Site, Periodic Cost 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State.

Item	Item Cost			Notes
	Annually	per 5 Years	per 30 Years	
Existing Cover Inspection	\$47,712			Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 2,660,000 ft ² .
Radiation Survey of surface soil	\$532,000			Cost is based on \$1,000 for every 5,000 square feet (Site = 2,660,000 ft ²)
Existing Cover Maintenance	\$301,380			Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Vadose Zone Monitoring		\$3,750	\$7,130	Monitoring occurs once every 5 years at a cost of \$75/lf of borehole. Bore hole replacement occurs once every 30 years (refer to calculation sheet, Table D-4).
Reporting	\$10,000			Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000		Prepare Site Condition Report every 5 years.
TOTALS	\$891,092	\$23,750	\$7,130	

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Table D-15. (Alternative 2), 216-A-25 Gable Mountain Pond Representative Site, Present Worth Analysis 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$16,100		\$16,100	1.0000	\$16,100
1		\$891,092	\$891,092	0.9690	\$863,468
2		\$891,092	\$891,092	0.9389	\$836,646
3		\$891,092	\$891,092	0.9098	\$810,716
4		\$891,092	\$891,092	0.8816	\$785,587
5		\$914,842	\$914,842	0.8543	\$781,550
6		\$891,092	\$891,092	0.8278	\$737,646
7		\$891,092	\$891,092	0.8021	\$714,745
8		\$891,092	\$891,092	0.7773	\$692,646
9		\$891,092	\$891,092	0.7532	\$671,171
10		\$914,842	\$914,842	0.7298	\$667,652
11		\$891,092	\$891,092	0.7072	\$630,180
12		\$891,092	\$891,092	0.6852	\$610,576
13		\$891,092	\$891,092	0.6640	\$591,685
14		\$891,092	\$891,092	0.6434	\$573,329
15		\$914,842	\$914,842	0.6235	\$570,404
16		\$891,092	\$891,092	0.6041	\$538,309
17		\$891,092	\$891,092	0.5854	\$521,645
18		\$891,092	\$891,092	0.5672	\$505,427
19		\$891,092	\$891,092	0.5496	\$489,744
20		\$914,842	\$914,842	0.5326	\$487,245
21		\$891,092	\$891,092	0.5161	\$459,893
22		\$891,092	\$891,092	0.5001	\$445,635
23		\$891,092	\$891,092	0.4846	\$431,823
24		\$891,092	\$891,092	0.4696	\$418,457
25		\$914,842	\$914,842	0.4550	\$416,253
26		\$891,092	\$891,092	0.4409	\$392,882
27		\$891,092	\$891,092	0.4272	\$380,675
28		\$891,092	\$891,092	0.4140	\$368,912
29		\$891,092	\$891,092	0.4011	\$357,417
30		\$921,972	\$921,972	0.3887	\$358,370
31		\$891,092	\$891,092	0.3766	\$335,585
32		\$891,092	\$891,092	0.3650	\$325,249
33		\$891,092	\$891,092	0.3536	\$315,090
34		\$891,092	\$891,092	0.3427	\$305,377
35		\$914,842	\$914,842	0.3321	\$303,819
36		\$891,092	\$891,092	0.3218	\$286,753
37		\$891,092	\$891,092	0.3118	\$277,843
38		\$891,092	\$891,092	0.3021	\$269,199
39		\$891,092	\$891,092	0.2927	\$260,823
40		\$914,842	\$914,842	0.2837	\$259,541
41		\$891,092	\$891,092	0.2749	\$244,961
42		\$891,092	\$891,092	0.2664	\$237,387
43		\$891,092	\$891,092	0.2581	\$229,991
44		\$891,092	\$891,092	0.2501	\$222,862
45		\$914,842	\$914,842	0.2423	\$221,666

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Table D-15. (Alternative 2), 216-A-25 Gable Mountain Pond Representative Site, Present Worth Analysis 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
46		\$891,092	\$891,092	0.2348	\$209,228
47		\$891,092	\$891,092	0.2275	\$202,723
48		\$891,092	\$891,092	0.2205	\$196,486
49		\$891,092	\$891,092	0.2136	\$190,337
50		\$914,842	\$914,842	0.2070	\$189,372
51		\$891,092	\$891,092	0.2006	\$178,753
52		\$891,092	\$891,092	0.1944	\$173,228
53		\$891,092	\$891,092	0.1884	\$167,882
54		\$891,092	\$891,092	0.1825	\$162,624
55		\$914,842	\$914,842	0.1769	\$161,836
56		\$891,092	\$891,092	0.1714	\$152,733
57		\$891,092	\$891,092	0.1661	\$148,010
58		\$891,092	\$891,092	0.1609	\$143,377
59		\$891,092	\$891,092	0.1559	\$138,921
60		\$921,972	\$921,972	0.1511	\$139,310
61		\$891,092	\$891,092	0.1464	\$130,456
62		\$891,092	\$891,092	0.1419	\$126,446
63		\$891,092	\$891,092	0.1375	\$122,525
64		\$891,092	\$891,092	0.1332	\$118,693
65		\$914,842	\$914,842	0.1291	\$118,106
66		\$891,092	\$891,092	0.1251	\$111,476
67		\$891,092	\$891,092	0.1212	\$108,000
68		\$891,092	\$891,092	0.1174	\$104,614
69		\$891,092	\$891,092	0.1138	\$101,406
70		\$914,842	\$914,842	0.1103	\$100,907
71		\$891,092	\$891,092	0.1068	\$95,169
72		\$891,092	\$891,092	0.1035	\$92,228
73		\$891,092	\$891,092	0.1003	\$89,377
74		\$891,092	\$891,092	0.0972	\$86,614
75		\$914,842	\$914,842	0.0942	\$86,178
76		\$891,092	\$891,092	0.0913	\$81,357
77		\$891,092	\$891,092	0.0884	\$78,773
78		\$891,092	\$891,092	0.0857	\$76,367
79		\$891,092	\$891,092	0.0830	\$73,961
80		\$914,842	\$914,842	0.0805	\$73,645
81		\$891,092	\$891,092	0.0780	\$69,505
82		\$891,092	\$891,092	0.0756	\$67,367
83		\$891,092	\$891,092	0.0732	\$65,228
84		\$891,092	\$891,092	0.0709	\$63,178
85		\$914,842	\$914,842	0.0687	\$62,850
86		\$891,092	\$891,092	0.0666	\$59,347
87		\$891,092	\$891,092	0.0645	\$57,475
88		\$891,092	\$891,092	0.0625	\$55,693
89		\$891,092	\$891,092	0.0606	\$54,000
90		\$921,972	\$921,972	0.0587	\$54,120
91		\$891,092	\$891,092	0.0569	\$50,703
92		\$891,092	\$891,092	0.0551	\$49,099

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Table D-15. (Alternative 2), 216-A-25 Gable Mountain Pond Representative Site, Present Worth Analysis 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
93		\$891,092	\$891,092	0.0534	\$47,584
94		\$891,092	\$891,092	0.0518	\$46,159
95		\$914,842	\$914,842	0.0502	\$45,925
96		\$891,092	\$891,092	0.0486	\$43,307
97		\$891,092	\$891,092	0.0471	\$41,970
98		\$891,092	\$891,092	0.0456	\$40,634
99		\$891,092	\$891,092	0.0442	\$39,386
100		\$914,842	\$914,842	0.0429	\$39,247
101		\$891,092	\$891,092	0.0415	\$36,980
102		\$891,092	\$891,092	0.0402	\$35,822
103		\$891,092	\$891,092	0.0390	\$34,753
104		\$891,092	\$891,092	0.0378	\$33,683
105		\$914,842	\$914,842	0.0366	\$33,483
106		\$891,092	\$891,092	0.0355	\$31,634
107		\$891,092	\$891,092	0.0344	\$30,654
108		\$891,092	\$891,092	0.0333	\$29,673
109		\$891,092	\$891,092	0.0323	\$28,782
110		\$914,842	\$914,842	0.0313	\$28,635
111		\$891,092	\$891,092	0.0303	\$27,000
112		\$891,092	\$891,092	0.0294	\$26,198
113		\$891,092	\$891,092	0.0285	\$25,396
114		\$891,092	\$891,092	0.0276	\$24,594
115		\$914,842	\$914,842	0.0267	\$24,426
116		\$891,092	\$891,092	0.0259	\$23,079
117		\$891,092	\$891,092	0.0251	\$22,366
118		\$891,092	\$891,092	0.0243	\$21,654
119		\$891,092	\$891,092	0.0236	\$21,030
120		\$921,972	\$921,972	0.0228	\$21,021
121		\$891,092	\$891,092	0.0221	\$19,693
122		\$891,092	\$891,092	0.0214	\$19,069
123		\$891,092	\$891,092	0.0208	\$18,535
124		\$891,092	\$891,092	0.0201	\$17,911
125		\$914,842	\$914,842	0.0195	\$17,839
126		\$891,092	\$891,092	0.0189	\$16,842
127		\$891,092	\$891,092	0.0183	\$16,307
128		\$891,092	\$891,092	0.0177	\$15,772
129		\$891,092	\$891,092	0.0172	\$15,327
130		\$914,842	\$914,842	0.0167	\$15,278
131		\$891,092	\$891,092	0.0161	\$14,347
132		\$891,092	\$891,092	0.0156	\$13,901
133		\$891,092	\$891,092	0.0152	\$13,545
134		\$891,092	\$891,092	0.0147	\$13,099
135		\$914,842	\$914,842	0.0142	\$12,991
136		\$891,092	\$891,092	0.0138	\$12,297
137		\$891,092	\$891,092	0.0134	\$11,941
138		\$891,092	\$891,092	0.0129	\$11,495
139		\$891,092	\$891,092	0.0125	\$11,139

Table D-15. (Alternative 2), 216-A-25 Gable Mountain Pond Representative Site, Present Worth Analysis 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
140		\$914,842	\$914,842	0.0122	\$11,161
141		\$891,092	\$891,092	0.0118	\$10,515
142		\$891,092	\$891,092	0.0114	\$10,158
143		\$891,092	\$891,092	0.0111	\$9,891
144		\$891,092	\$891,092	0.0107	\$9,535
145		\$914,842	\$914,842	0.0104	\$9,514
146		\$891,092	\$891,092	0.0101	\$9,000
147		\$891,092	\$891,092	0.0098	\$8,733
148		\$891,092	\$891,092	0.0094	\$8,376
149		\$891,092	\$891,092	0.0092	\$8,198
150		\$914,842	\$914,842	0.0089	\$8,142
NON-DISCOUNTED COST		\$134,420,929	TOTAL PRESENT WORTH		\$27,758,244

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where $e = 3.2\%$ and $n =$ year (1 - 150).

Table D-16. (Alternative 2), 216-A-25 Gable Mountain Pond Representative Site, Calculation Sheet
200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State.

Items	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Purchase, Deliver, and Place Topsoil											
Purchase Pea Gravel (Purchase and Delivery)	1,970	cy		\$55.67			\$0	\$109,670	\$0	\$0	\$109,670
Silt Loam, Excavate/Load (17,773 cy)	16	day		\$592.00	\$1,190.17		\$0	\$0	\$9,472	\$19,043	\$28,515
Silt Loam Hauling (5 trucks 16 days each)	80	day		\$296.00	\$398.55		\$0	\$0	\$23,680	\$31,884	\$55,564
Equipment Mob/Demob	9	ea		\$100.00	\$352.00		\$0	\$0	\$900	\$3,168	\$4,068
Silt Loam/Pea Gravel Layer, Front End Loader	16	day		\$296.00	\$630.27		\$0	\$0	\$4,736	\$10,084	\$14,820
Silt Loam/Pea Gravel Layer, Bulldozer w/ Tiller	16	day		\$296.00	\$951.52		\$0	\$0	\$4,736	\$15,224	\$19,960
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	29,555	sy		\$0.26	\$1.19	\$0.18	\$0	\$7,684	\$35,170	\$5,320	\$48,175
Oversight (8 hrs/day)	46	days		\$448.00			\$0	\$0	\$20,608	\$0	\$20,608
Total Cost							\$0	\$117,354	\$99,302	\$84,723	\$301,380

Drill Vadose Zone Borehole cost occurs every 30 years)											
Mobilize/Demobilize Drill Rig	1	ls			\$625.00	\$1,875.00	\$0	\$0	\$625	\$1,875	\$2,500
Borehole Installation	50	lf			\$8.77	\$36.23	\$0	\$0	\$439	\$1,811	\$2,250
Decontamination of Drill Rig	1	ls	\$1,000.00				\$1,000	\$0	\$0	\$0	\$1,000
Collect/containerize IDW	1	ea	\$50.00				\$50	\$0	\$0	\$0	\$50
Characterize IDW	1	ea	\$700.00				\$700	\$0	\$0	\$0	\$700
Transport/Dispose IDW Off-site	1	drums	\$150.00				\$150	\$0	\$0	\$0	\$150
Oversight (Inc. Sampling, Labor, and Equipment)	8	hrs			\$56.00		\$0	\$0	\$448	\$0	\$448
PPE (1 p * 1 day)	1	day		\$31.67			\$0	\$32	\$0	\$0	\$32
Total Cost							\$1,900	\$32	\$1,512	\$3,686	\$7,130

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Table D-17. (Alternative 2) 216-T-26 Crib representative Site, Capital Cost
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
FLUOR HANFORD COST											
IMPLEMENT INSTITUTIONAL CONTROLS											
Prepare Institutional Controls	200	hr			\$56.00		\$0	\$0	\$11,200	\$0	\$11,200
Fluor Hanford Field Cost							\$0	\$0	\$11,200	\$0	\$11,200
Fluor Hanford G & A on Labor Cost @	15%							\$1,680		\$1,680	
Fluor Hanford G & A on Material Cost @	15%						\$0			\$0	
Fluor Hanford G & A on Equipment Cost @	15%								\$0	\$0	
Fluor Hanford Total Cost							\$0	\$0	\$12,880	\$0	\$12,880
Contingency on Total Field Costs @	25%									\$3,220	
TOTAL COST										\$16,100	

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Table D-18. (Alternative 2) 216-T-26 Crib representative Site, Periodic Cost
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State.

Item	Item Cost			Notes
	Annually	per 5 Years	per 30 Years	
Existing Cover Inspection	\$224			Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 900 ft ² .
Radiation Survey of surface soil	\$1,000			Cost is based on \$1,000 for every 5,000 square feet (Site = 900 \ ft ²)
Existing Cover Maintenance	\$6,500			Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Vadose Zone Monitoring		\$3,750	\$7,130	Monitoring occurs once every 5 years at a cost of \$75/lf of borehole. Bore hole replacement occurs once every 30 years (refer to calculation sheet, Table D-4).
Reporting	\$10,000			Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000		Prepare Site Condition Report every 5 years.
TOTALS	\$17,724	\$23,750	\$7,130	

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Table D-19 (Alternative 2) 216-T-26 Crib representative Site, Present Worth Analysis
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State, (4 pages).

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$16,100		\$16,100	1.0000	\$16,100
1		\$17,724	\$17,724	0.9690	\$17,175
2		\$17,724	\$17,724	0.9389	\$16,641
3		\$17,724	\$17,724	0.9098	\$16,125
4		\$17,724	\$17,724	0.8816	\$15,626
5		\$41,474	\$41,474	0.8543	\$35,431
6		\$17,724	\$17,724	0.8278	\$14,672
7		\$17,724	\$17,724	0.8021	\$14,217
8		\$17,724	\$17,724	0.7773	\$13,777
9		\$17,724	\$17,724	0.7532	\$13,350
10		\$41,474	\$41,474	0.7298	\$30,268
11		\$17,724	\$17,724	0.7072	\$12,535
12		\$17,724	\$17,724	0.6852	\$12,145
13		\$17,724	\$17,724	0.6640	\$11,769
14		\$17,724	\$17,724	0.6434	\$11,404
15		\$41,474	\$41,474	0.6235	\$25,859
16		\$17,724	\$17,724	0.6041	\$10,707
17		\$17,724	\$17,724	0.5854	\$10,376
18		\$17,724	\$17,724	0.5672	\$10,053
19		\$17,724	\$17,724	0.5496	\$9,741
20		\$41,474	\$41,474	0.5326	\$22,089
21		\$17,724	\$17,724	0.5161	\$9,147
22		\$17,724	\$17,724	0.5001	\$8,864
23		\$17,724	\$17,724	0.4846	\$8,589
24		\$17,724	\$17,724	0.4696	\$8,323
25		\$41,474	\$41,474	0.4550	\$18,871
26		\$17,724	\$17,724	0.4409	\$7,815
27		\$17,724	\$17,724	0.4272	\$7,572
28		\$17,724	\$17,724	0.4140	\$7,338
29		\$17,724	\$17,724	0.4011	\$7,109
30		\$48,604	\$48,604	0.3887	\$18,892
31		\$17,724	\$17,724	0.3766	\$6,675
32		\$17,724	\$17,724	0.3650	\$6,469
33		\$17,724	\$17,724	0.3536	\$6,267
34		\$17,724	\$17,724	0.3427	\$6,074
35		\$41,474	\$41,474	0.3321	\$13,774
36		\$17,724	\$17,724	0.3218	\$5,704
37		\$17,724	\$17,724	0.3118	\$5,526
38		\$17,724	\$17,724	0.3021	\$5,354
39		\$17,724	\$17,724	0.2927	\$5,188
40		\$41,474	\$41,474	0.2837	\$11,766
41		\$17,724	\$17,724	0.2749	\$4,872
42		\$17,724	\$17,724	0.2664	\$4,722
43		\$17,724	\$17,724	0.2581	\$4,575
44		\$17,724	\$17,724	0.2501	\$4,433
45		\$41,474	\$41,474	0.2423	\$10,049
46		\$17,724	\$17,724	0.2348	\$4,162

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Table D-19 (Alternative 2) 216-T-26 Crib representative Site, Present Worth Analysis
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State, (4 pages).

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
47		\$17,724	\$17,724	0.2275	\$4,032
48		\$17,724	\$17,724	0.2205	\$3,908
49		\$17,724	\$17,724	0.2136	\$3,786
50		\$41,474	\$41,474	0.2070	\$8,585
51		\$17,724	\$17,724	0.2006	\$3,555
52		\$17,724	\$17,724	0.1944	\$3,446
53		\$17,724	\$17,724	0.1884	\$3,339
54		\$17,724	\$17,724	0.1825	\$3,235
55		\$41,474	\$41,474	0.1769	\$7,337
56		\$17,724	\$17,724	0.1714	\$3,038
57		\$17,724	\$17,724	0.1661	\$2,944
58		\$17,724	\$17,724	0.1609	\$2,852
59		\$17,724	\$17,724	0.1559	\$2,763
60		\$48,604	\$48,604	0.1511	\$7,344
61		\$17,724	\$17,724	0.1464	\$2,595
62		\$17,724	\$17,724	0.1419	\$2,515
63		\$17,724	\$17,724	0.1375	\$2,437
64		\$17,724	\$17,724	0.1332	\$2,361
65		\$41,474	\$41,474	0.1291	\$5,354
66		\$17,724	\$17,724	0.1251	\$2,217
67		\$17,724	\$17,724	0.1212	\$2,148
68		\$17,724	\$17,724	0.1174	\$2,081
69		\$17,724	\$17,724	0.1138	\$2,017
70		\$41,474	\$41,474	0.1103	\$4,575
71		\$17,724	\$17,724	0.1068	\$1,893
72		\$17,724	\$17,724	0.1035	\$1,834
73		\$17,724	\$17,724	0.1003	\$1,778
74		\$17,724	\$17,724	0.0972	\$1,723
75		\$41,474	\$41,474	0.0942	\$3,907
76		\$17,724	\$17,724	0.0913	\$1,618
77		\$17,724	\$17,724	0.0884	\$1,567
78		\$17,724	\$17,724	0.0857	\$1,519
79		\$17,724	\$17,724	0.0830	\$1,471
80		\$41,474	\$41,474	0.0805	\$3,339
81		\$17,724	\$17,724	0.0780	\$1,382
82		\$17,724	\$17,724	0.0756	\$1,340
83		\$17,724	\$17,724	0.0732	\$1,297
84		\$17,724	\$17,724	0.0709	\$1,257
85		\$41,474	\$41,474	0.0687	\$2,849
86		\$17,724	\$17,724	0.0666	\$1,180
87		\$17,724	\$17,724	0.0645	\$1,143
88		\$17,724	\$17,724	0.0625	\$1,108
89		\$17,724	\$17,724	0.0606	\$1,074
90		\$48,604	\$48,604	0.0587	\$2,853
91		\$17,724	\$17,724	0.0569	\$1,009
92		\$17,724	\$17,724	0.0551	\$977
93		\$17,724	\$17,724	0.0534	\$946
94		\$17,724	\$17,724	0.0518	\$918

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Table D-19 (Alternative 2) 216-T-26 Crib representative Site, Present Worth Analysis
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State, (4 pages).

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
95		\$41,474	\$41,474	0.0502	\$2,082
96		\$17,724	\$17,724	0.0486	\$861
97		\$17,724	\$17,724	0.0471	\$835
98		\$17,724	\$17,724	0.0456	\$808
99		\$17,724	\$17,724	0.0442	\$783
100		\$41,474	\$41,474	0.0429	\$1,779
101		\$17,724	\$17,724	0.0415	\$736
102		\$17,724	\$17,724	0.0402	\$713
103		\$17,724	\$17,724	0.0390	\$691
104		\$17,724	\$17,724	0.0378	\$670
105		\$41,474	\$41,474	0.0366	\$1,518
106		\$17,724	\$17,724	0.0355	\$629
107		\$17,724	\$17,724	0.0344	\$610
108		\$17,724	\$17,724	0.0333	\$590
109		\$17,724	\$17,724	0.0323	\$572
110		\$41,474	\$41,474	0.0313	\$1,298
111		\$17,724	\$17,724	0.0303	\$537
112		\$17,724	\$17,724	0.0294	\$521
113		\$17,724	\$17,724	0.0285	\$505
114		\$17,724	\$17,724	0.0276	\$489
115		\$41,474	\$41,474	0.0267	\$1,107
116		\$17,724	\$17,724	0.0259	\$459
117		\$17,724	\$17,724	0.0251	\$445
118		\$17,724	\$17,724	0.0243	\$431
119		\$17,724	\$17,724	0.0236	\$418
120		\$48,604	\$48,604	0.0228	\$1,108
121		\$17,724	\$17,724	0.0221	\$392
122		\$17,724	\$17,724	0.0214	\$379
123		\$17,724	\$17,724	0.0208	\$369
124		\$17,724	\$17,724	0.0201	\$356
125		\$41,474	\$41,474	0.0195	\$809
126		\$17,724	\$17,724	0.0189	\$335
127		\$17,724	\$17,724	0.0183	\$324
128		\$17,724	\$17,724	0.0177	\$314
129		\$17,724	\$17,724	0.0172	\$305
130		\$41,474	\$41,474	0.0167	\$693
131		\$17,724	\$17,724	0.0161	\$285
132		\$17,724	\$17,724	0.0156	\$276
133		\$17,724	\$17,724	0.0152	\$269
134		\$17,724	\$17,724	0.0147	\$261
135		\$41,474	\$41,474	0.0142	\$589
136		\$17,724	\$17,724	0.0138	\$245
137		\$17,724	\$17,724	0.0134	\$238
138		\$17,724	\$17,724	0.0129	\$229
139		\$17,724	\$17,724	0.0125	\$222
140		\$41,474	\$41,474	0.0122	\$506
141		\$17,724	\$17,724	0.0118	\$209
142		\$17,724	\$17,724	0.0114	\$202

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Table D-19 (Alternative 2) 216-T-26 Crib representative Site, Present Worth Analysis
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State, (4 pages).

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
143		\$17,724	\$17,724	0.0111	\$197
144		\$17,724	\$17,724	0.0107	\$190
145		\$41,474	\$41,474	0.0104	\$431
146		\$17,724	\$17,724	0.0101	\$179
147		\$17,724	\$17,724	0.0098	\$174
148		\$17,724	\$17,724	0.0094	\$167
149		\$17,724	\$17,724	0.0092	\$163
150		\$41,474	\$41,474	0.0089	\$369
NON-DISCOUNTED COST		\$3,415,751	TOTAL PRESENT WORTH		\$707,509

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where e = 3.2% and n = year (1 - 150).

Table D-20. (Alternative 2) 216-T-26 Crib representative Site, Calculation Sheet
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State.

Items	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Purchase, Deliver, and Place Topsoil											
Purchase Pea Gravel (Purchase and Delivery)	1	cy		\$55.67			\$0	\$56	\$0	\$0	\$56
Silt Loam, Excavate/Load (6 cy)	1	day			\$296.00	\$559.90	\$0	\$0	\$296	\$560	\$856
Silt Loam Hauling, 1 Truck	1	day			\$296.00	\$398.55	\$0	\$0	\$296	\$399	\$695
Equipment Mob/Demob	4	ea			\$100.00	\$352.00	\$0	\$0	\$400	\$1,408	\$1,808
Silt Loam/Pea Gravel Layer, Front End Loader	1	day			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Silt Loam/Pea Gravel Layer, Bulldozer w/ Tiller	1	day			\$296.00	\$951.52	\$0	\$0	\$296	\$952	\$1,248
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	10	sy		\$0.26	\$1.19	\$0.18	\$0	\$3	\$12	\$2	\$16
Oversight (8 hrs/day)	2	day			\$448.00		\$0	\$0	\$896	\$0	\$896

Total Cost	\$0	\$58	\$2,492	\$3,950	\$6,500
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Drill Vados Zone Borehole cost occurs every 30 years)											
Mobilize/Demobilize Drill Rig	1	ls			\$625.00	\$1,875.00	\$0	\$0	\$625	\$1,875	\$2,500
Borehole Installation	50	lf			\$8.77	\$36.23	\$0	\$0	\$439	\$1,811	\$2,250
Decontamination of Drill Rig	1	ls	\$1,000.00				\$1,000	\$0	\$0	\$0	\$1,000
Collect/containerize IDW	1	ea	\$50.00				\$50	\$0	\$0	\$0	\$50
Characterize IDW	1	ea	\$700.00				\$700	\$0	\$0	\$0	\$700
Transport/Dispose IDW Off-site	1	drum	\$150.00				\$150	\$0	\$0	\$0	\$150
Oversight (Inc. Sampling, Labor, and Equipment)	8	hrs			\$56.00		\$0	\$0	\$448	\$0	\$448
PPE (1 p * 1 day)	1	day		\$31.67			\$0	\$32	\$0	\$0	\$32

Total Cost	\$1,900	\$32	\$1,512	\$3,686	\$7,130
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Table D-21. (Alternative 3), 216-U-10 Pond Representative Site, Capital Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
FLUOR HANFORD COST											
OVERSIGHT											
Construction Oversight (Includes 1 RCT)	19,746	days			\$1,720.00		\$0	\$0	\$33,963,120	\$0	\$33,963,120
RCT on Excavator (2 for 12,922 days)	25,844	days			\$448.00		\$0	\$0	\$11,578,112	\$0	\$11,578,112
RCT Decontamination Crew (4 RCT)	9,150	days			\$1,792.00		\$0	\$0	\$16,396,800	\$0	\$16,396,800
SAMPLING CREWS AND SAMPLING											
Overburden Samples (6 Per Site)	6	ea	\$1,100.00				\$6,600	\$0	\$0	\$0	\$6,600
LLW Samples (1 per 845 lcy Contaminated Soil, or 6 Min)	13,698	ea	\$5,000.00				\$68,490,000	\$0	\$0	\$0	\$68,490,000
Site Certification Samples (1 per 6,264 sf, or 6 Min)	502	ea	\$5,000.00				\$2,510,000	\$0	\$0	\$0	\$2,510,000
QC Samples (5% of Total Samples)	710	ea	\$5,000.00				\$3,550,000	\$0	\$0	\$0	\$3,550,000
Air Sampling and Crew (Sampler and RCT)	12,922	days	\$1,000.00		\$896.00	\$500.00	\$12,922,000	\$0	\$11,578,112	\$6,461,000	\$30,961,112
Soil/Sediment Sampling Crew (Sampler 50% and RCT)	12,922	days			\$672.00		\$0	\$0	\$8,683,584	\$0	\$8,683,584
Site Cert Sampling Crew (Sampler and RCT, 3 samples/hr)	21	days			\$896.00		\$0	\$0	\$18,816	\$0	\$18,816
TRANSPORTATION AND DISPOSAL											
Transportation and Disposal of Rolloff Boxes to ERDF	914,955	ea	\$1,100.00				\$1,006,450,500	\$0	\$0	\$0	\$1,006,450,500
Fluor Hanford Field Cost							\$1,093,929,100	\$0	\$82,218,544	\$6,461,000	\$1,182,608,644
Fluor Hanford G & A on Labor Cost @ 15%									\$12,332,782		\$12,332,782
Fluor Hanford G & A on Material Cost @ 15%								\$0			\$0
Fluor Hanford G & A on Equipment Cost @ 15%										\$969,150	\$969,150
Fluor Hanford Total Cost							\$1,093,929,100	\$0	\$94,551,326	\$7,430,150	\$1,195,910,576
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Office Trailer	940.3	mo				\$350.00	\$0	\$0	\$0	\$329,105	\$329,105
Field Office Support	940.3	mo		\$139.00			\$0	\$130,702	\$0	\$0	\$130,702
Storage Trailer	940.3	mo				\$105.00	\$0	\$0	\$0	\$98,732	\$98,732
Equipment Mobilization/Demobilization	23	ea			\$100.00	\$352.00	\$0	\$0	\$2,300	\$8,096	\$10,396
Personnel Mobilization/Demobilization	25	ea			\$592.00		\$0	\$0	\$14,800	\$0	\$14,800
Construction Survey (2 surveys at 86.6 acres each)	173.2	ac	\$1,748.00				\$302,754	\$0	\$0	\$0	\$302,754

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Table D-21. (Alternative 3), 216-U-10 Pond Representative Site, Capital Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

			Unit Cost			Extended Cost				
Site Utilities, Generator and Oiler	940.3	mo		\$6,216.00	\$1,394.80	\$0	\$0	\$5,844,905	\$1,311,530	\$7,156,435
Install Temporary Fence (Blaze Orange)	8,510	lf	\$1.63	\$1.16		\$0	\$13,871	\$9,872	\$0	\$23,743
Haul Road - Gravel, 6" thick	4,400	sy	\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (See Table D-22)	27	ea	\$6,682.86	\$5,920.00	\$310.56	\$0	\$180,437	\$159,840	\$8,385	\$348,662
DECONTAMINATION										
Decontamination Crew (4 Laborers)	9,150	day		\$1,184.00		\$0	\$0	\$10,833,600	\$0	\$10,833,600
Water for Decon Process (1,000 gal/month)	435,714	gal	\$0.20			\$0	\$87,143	\$0	\$0	\$87,143
EXCAVATION										
Water Truck	12,922	day		\$296.00	\$80.00	\$0	\$0	\$3,824,912	\$1,033,760	\$4,858,672
Hydraulic Excavator (2 for 12,922 days)	25,844	day		\$296.00	\$559.90	\$0	\$0	\$7,649,824	\$14,470,179	\$22,120,003
Front End Loader	3,772	day		\$296.00	\$630.27	\$0	\$0	\$1,116,512	\$2,377,366	\$3,493,878
SITE RESTORATION										
Front End Loader, Overburden (2 for 2,447 days)	4,894	day		\$296.00	\$630.27	\$0	\$0	\$1,448,624	\$3,084,525	\$4,533,149
Bulldozer, Overburden (2 for 2,447 days)	4,894	day		\$296.00	\$656.42	\$0	\$0	\$1,448,624	\$3,212,505	\$4,661,129
Hydraulic Excavator, Borrow Material (2 for 3,932 days)	7,864	day		\$296.00	\$559.90	\$0	\$0	\$2,327,744	\$4,403,091	\$6,730,835
Front End Loader, Borrow Material (2 for 3,932 days)	7,864	day		\$296.00	\$630.27	\$0	\$0	\$2,327,744	\$4,956,417	\$7,284,161
Hauling Borrow Material, 10 Trucks, 3,932 days/each	39,320	day		\$296.00	\$398.55	\$0	\$0	\$11,638,720	\$15,671,080	\$27,309,800
Front End Loader, Borrow Material (2 for 3,932 days)	7,864	day		\$296.00	\$630.27	\$0	\$0	\$2,327,744	\$4,956,417	\$7,284,161
Bulldozer, Borrow Material (2 for 3,932 days)	7,864	day		\$296.00	\$656.42	\$0	\$0	\$2,327,744	\$5,162,064	\$7,489,808
Fine Grading and Seeding (Lime, Fert, and Seed Incl.)	419,137	sy	\$0.26	\$1.19	\$0.18	\$0	\$108,976	\$498,773	\$75,445	\$683,193
Water Truck	6,379	day		\$296.00	\$80.00	\$0	\$0	\$1,888,184	\$510,320	\$2,398,504
MISCELLANEOUS										
Support Personnel	19,746	day		\$1,896.00		\$0	\$0	\$37,438,416	\$0	\$37,438,416
Post Construction Documents	680	hr		\$50.00		\$0	\$0	\$34,000	\$0	\$34,000
Construction Contractor Field Cost						\$302,754	\$549,729	\$93,164,333	\$61,671,349	\$155,688,165
Direct Markup on Labor @ 25%								\$23,291,083		\$23,291,083
Direct Markup on Materials @ 10%							\$54,973			\$54,973
Direct Markup on Subcontracts @ 10%						\$30,275				\$30,275
Construction Contractor G&A @ 26.5%						\$80,230	\$145,678	\$24,688,548	\$16,342,907	\$41,257,364
Construction Contractor Subtotal						\$413,259	\$750,380	\$141,143,965	\$78,014,257	\$220,321,860
Fluor Hanford G&A on Construction Contractor Cost @ 15%						\$61,989	\$112,557	\$21,171,595	\$11,702,138	\$33,048,279

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Table D-21. (Alternative 3), 216-U-10 Pond Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

	Unit Cost	Extended Cost				
Construction Contractor Total Cost		\$475,247	\$862,937	\$162,315,560	\$89,716,395	\$253,370,139
Fluor Hanford Total Cost (From Above)		\$1,093,929,100	\$0	\$94,551,326	\$7,430,150	\$1,195,910,576
Project Subtotal		\$1,094,404,347	\$862,937	\$256,866,886	\$97,146,545	\$1,449,280,715
Contingency on Total Field Costs @ 25%						\$362,320,179
TOTAL COST						\$1,811,600,893

Table D-22. (Alternative 3), 216-U-10 Pond Representative Site, Calculation Sheet
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Decontamination Pad Construction											
Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
3" SCH 80 PVC Pipe	5	lf		\$1.63			\$0	\$8	\$0	\$0	\$8
Sump Pump	1	ea		\$2,005.00			\$0	\$2,005	\$0	\$0	\$2,005
Sump Pump Hoses (50 lf)	1	ea		\$493.00			\$0	\$493	\$0	\$0	\$493
Sump Construction (2)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76
Temporary Storage Tank (1,000 gal)	2	ea		\$1,674.00			\$0	\$3,348	\$0	\$0	\$3,348
4 Laborers, 5 days to Build/Remove	5	day			\$1,184.00		\$0	\$0	\$5,920	\$0	\$5,920
Subtotal Direct Cost							\$0.00	\$6,682.86	\$5,920.00	\$310.56	\$12,913

NOTE:

Cost of labor to run the decontamination pad provided under line item Decontamination Crew on Table D-21.
 Assume all decon pad materials replaced every 36 months.

Table D-23. (Alternative 3), 216-U-14 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
FLUOR HANFORD COST											
OVERSIGHT											
Construction Oversight (Includes 1 RCT)	142	days			\$1,720.00		\$0	\$0	\$244,240	\$0	\$244,240
RCT on Excavator (2 for 47 days)	94	days			\$448.00		\$0	\$0	\$42,112	\$0	\$42,112
RCT Decontamination Crew (4 RCT)	7	days			\$1,792.00		\$0	\$0	\$12,544	\$0	\$12,544
SAMPLING CREWS AND SAMPLING											
Overburden Samples (6 Per Site)	6	ea	\$1,100.00				\$6,600	\$0	\$0	\$0	\$6,600
LLW Samples (1 per 845 lcy Contaminated Soil, or 6 Min)	11	ea	\$5,000.00				\$55,000	\$0	\$0	\$0	\$55,000
Site Certification Samples (1 per 6,264 sf, or 6 Min)	45	ea	\$5,000.00				\$225,000	\$0	\$0	\$0	\$225,000
QC Samples (5% of Total Samples)	4	ea	\$5,000.00				\$20,000	\$0	\$0	\$0	\$20,000
Air Sampling and Crew (Sampler and RCT)	47	days	\$1,000.00		\$896.00	\$500.00	\$47,000	\$0	\$42,112	\$23,500	\$112,612
Soil/Sediment Sampling Crew (Sampler 50% and RCT)	47	days			\$672.00		\$0	\$0	\$31,584	\$0	\$31,584
Site Cert Sampling Crew (Sampler and RCT, 3 samples/hr)	2	days			\$896.00		\$0	\$0	\$1,792	\$0	\$1,792
TRANSPORTATION AND DISPOSAL											
Transportation and Disposal of Rolloff Boxes to ERDF	689	ea	\$1,100.00				\$757,900	\$0	\$0	\$0	\$757,900
Fluor Hanford Field Cost							\$1,111,500	\$0	\$374,384	\$23,500	\$1,509,384
Fluor Hanford G & A on Labor Cost @ 15%									\$56,158		\$56,158
Fluor Hanford G & A on Material Cost @ 15%								\$0			\$0
Fluor Hanford G & A on Equipment Cost @ 15%										\$3,525	\$3,525
Fluor Hanford Total Cost							\$1,111,500	\$0	\$430,542	\$27,025	\$1,569,067
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Office Trailer	6.8	mo				\$350.00	\$0	\$0	\$0	\$2,380	\$2,380
Field Office Support	6.8	mo		\$139.00			\$0	\$945	\$0	\$0	\$945

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Table D-23. (Alternative 3), 216-U-14 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Storage Trailer	6.8	mo				\$105.00	\$0	\$0	\$0	\$714	\$714
Equipment Mobilization/Demobilization	14	ea			\$100.00	\$352.00	\$0	\$0	\$1,400	\$4,928	\$6,328
Personnel Mobilization/Demobilization	16	ea			\$592.00		\$0	\$0	\$9,472	\$0	\$9,472
Construction Survey (2 surveys at 7.7 acres each)	15.4	ac	\$1,748.00				\$26,919	\$0	\$0	\$0	\$26,919
Site Utilities, Generator and Oiler	6.8	mo			\$6,216.00	\$1,394.80	\$0	\$0	\$42,269	\$9,485	\$51,753
Install Temporary Fence (Blaze Orange)	13,860	lf		\$1.63	\$1.16		\$0	\$22,592	\$16,078	\$0	\$38,669
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (See Table D-24)	1	ea		\$6,682.86	\$5,920.00	\$310.56	\$0	\$6,683	\$5,920	\$311	\$12,913
DECONTAMINATION											
Decontamination Crew (4 Laborers)	7	day			\$1,184.00		\$0	\$0	\$8,288	\$0	\$8,288
Water for Decon Process (1,000 gal/month)	333	gal		\$0.20			\$0	\$67	\$0	\$0	\$67
EXCAVATION											
Water Truck	47	day			\$296.00	\$80.00	\$0	\$0	\$13,912	\$3,760	\$17,672
Hydraulic Excavator (2 for 47 days)	94	day			\$296.00	\$559.90	\$0	\$0	\$27,824	\$52,631	\$80,455
Front End Loader	40	day			\$296.00	\$630.27	\$0	\$0	\$11,840	\$25,211	\$37,051
SITE RESTORATION											
Front End Loader, Overburden (2 for 26 days)	52	day			\$296.00	\$630.27	\$0	\$0	\$15,392	\$32,774	\$48,166
Bulldozer, Overburden (2 for 26 days)	52	day			\$296.00	\$656.42	\$0	\$0	\$15,392	\$34,134	\$49,526
Hydraulic Excavator, Borrow Material	6	day			\$296.00	\$559.90	\$0	\$0	\$1,776	\$3,359	\$5,135
Front End Loader, Borrow Material	6	day			\$296.00	\$630.27	\$0	\$0	\$1,776	\$3,782	\$5,558
Hauling Borrow Material, 5 Trucks, 6 days/each	30	day			\$296.00	\$398.55	\$0	\$0	\$8,880	\$11,957	\$20,837
Front End Loader, Borrow Material	6	day			\$296.00	\$630.27	\$0	\$0	\$1,776	\$3,782	\$5,558
Bulldozer, Borrow Material	6	day			\$296.00	\$656.42	\$0	\$0	\$1,776	\$3,939	\$5,715
Fine Grading and Seeding (Lime, Fert, and Seed Incl.)	37,403	sy		\$0.26	\$1.19	\$0.18	\$0	\$9,725	\$44,510	\$6,733	\$60,967
Water Truck	32	day			\$296.00	\$80.00	\$0	\$0	\$9,472	\$2,560	\$12,032
MISCELLANEOUS											
Support Personnel	142	day			\$1,896.00		\$0	\$0	\$269,232	\$0	\$269,232
Post Construction Documents	680	hr			\$50.00		\$0	\$0	\$34,000	\$0	\$34,000
Construction Contractor Field Cost							\$26,919	\$68,611	\$542,436	\$204,769	\$842,735

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Table D-23. (Alternative 3), 216-U-14 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Direct Markup on Labor @ 25%								\$135,609			\$135,609
Direct Markup on Materials @ 10%							\$6,861				\$6,861
Direct Markup on Subcontracts @ 10%						\$2,692					\$2,692
Construction Contractor G&A @ 26.5%						\$7,134	\$18,182	\$143,746	\$54,264		\$223,325
Construction Contractor Subtotal						\$36,745	\$93,654	\$821,790	\$259,032		\$1,211,222
Fluor Hanford G&A on Construction Contractor Cost @ 15%						\$5,512	\$14,048	\$123,269	\$38,855		\$181,683
Construction Contractor Total Cost						\$42,256	\$107,703	\$945,059	\$297,887		\$1,392,905
Fluor Hanford Total Cost (From Above)						\$1,111,500	\$0	\$430,542	\$27,025		\$1,569,067
Project Subtotal						\$1,153,756	\$107,703	\$1,375,601	\$324,912		\$2,961,972
Contingency on Total Field Costs @ 25%											\$740,493
TOTAL COST											\$3,702,465

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Table D-24. (Alternative 3), 216-U-14 Ditch Representative Site, Calculation Sheet
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Decontamination Pad Construction											
Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
3" SCH 80 PVC Pipe	5	lf		\$1.63			\$0	\$8	\$0	\$0	\$8
Sump Pump	1	ea		\$2,005.00			\$0	\$2,005	\$0	\$0	\$2,005
Sump Pump Hoses (50 lf)	1	ea		\$493.00			\$0	\$493	\$0	\$0	\$493
Sump Construction (2)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76
Temporary Storage Tank (1,000 gal)	2	ea		\$1,674.00			\$0	\$3,348	\$0	\$0	\$3,348
4 Laborers, 5 days to Build/Remove	5	day			\$1,184.00		\$0	\$0	\$5,920	\$0	\$5,920
Subtotal Direct Cost							\$0.00	\$6,682.86	\$5,920.00	\$310.56	\$12,913

NOTE:

Cost of labor to run the decontamination pad provided under line item Decontamination Crew on Table D-23.

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Table D-25. (Alternative 3), 216-Z-11 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equip-ment	Subcontract	Material	Labor	Equip-ment	
FLUOR HANFORD COST											
OVERSIGHT											
Construction Oversight (Includes 1 RCT)	229	days			\$1,720.00		\$0	\$0	\$393,880	\$0	\$393,880
RCT on Excavator (2 for 97 days)	194	days			\$448.00		\$0	\$0	\$86,912	\$0	\$86,912
RCT Decontamination Crew (4 RCT)	64	days			\$1,792.00		\$0	\$0	\$114,688	\$0	\$114,688
Additional RCT During Excavation (4 RCT)	97	days			\$1,792.00		\$0	\$0	\$173,824	\$0	\$173,824
RCT Supervisor	97	days			\$580.88		\$0	\$0	\$56,345	\$0	\$56,345
Radiological Engineer	97	days			\$502.24		\$0	\$0	\$48,717	\$0	\$48,717
SAMPLING CREWS AND SAMPLING											
Overburden Samples (6 Per Site)	6	ea	\$1,100.00				\$6,600	\$0	\$0	\$0	\$6,600
LLW Samples (1 per 845 lcy Contaminated Soil, or 6 Min)	48	ea	\$5,000.00				\$240,000	\$0	\$0	\$0	\$240,000
Site Certification Samples (1 per 6,264 sf, or 6 Min)	44	ea	\$5,000.00				\$220,000	\$0	\$0	\$0	\$220,000
QC Samples (5% of Total Samples)	5	ea	\$5,000.00				\$25,000	\$0	\$0	\$0	\$25,000
Air Sampling and Crew (Sampler and RCT)	97	days	\$1,000.00		\$896.00	\$500.00	\$97,000	\$0	\$86,912	\$48,500	\$232,412
Soil/Sediment Sampling Crew (Sampler 50% and RCT)	97	days			\$672.00		\$0	\$0	\$65,184	\$0	\$65,184
Site Cert Sampling Crew (Sampler and RCT, 3 samples/hr)	2	days			\$896.00		\$0	\$0	\$1,792	\$0	\$1,792
TRANSPORTATION AND DISPOSAL											
Transportation and Disposal of Rolloff Boxes to ERDF	2,946	ea	\$1,100.00				\$3,240,600	\$0	\$0	\$0	\$3,240,600
Hauling TRU Waste to WRAP (2 Trucks, 13 days/each)	26	day			\$296.00	\$313.90	\$0	\$0	\$7,696	\$8,161	\$15,857
Dry Flow Hopper, 70 cy	1	ea		\$1,400.00			\$0	\$1,400	\$0	\$0	\$1,400
Spill Pallet, 4 55-gallon Drum Capacity	1	ea		\$295.00			\$0	\$295	\$0	\$0	\$295
HIC Loading Crew (4 Laborers)	109	day			\$1,184.00		\$0	\$0	\$129,056	\$0	\$129,056
Hauling HIC Containers to WIPP	10,906	ea	\$5,000.00				\$54,530,000	\$0	\$0	\$0	\$54,530,000
Fluor Hanford Field Cost							\$58,359,200	\$1,695	\$1,165,007	\$56,661	\$59,582,563
Fluor Hanford G & A on Labor Cost @ 15%									\$174,751		\$174,751
Fluor Hanford G & A on Material Cost @ 15%								\$254			\$254

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Table D-25. (Alternative 3), 216-Z-11 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equip-ment	Subcontract	Material	Labor	Equip-ment	
Fluor Hanford G & A on Equipment Cost @ 15%										\$8,499	\$8,499
Fluor Hanford Total Cost							\$58,359,200	\$1,949	\$1,339,758	\$65,160	\$59,766,067
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Office Trailer	10.9	mo				\$350.00	\$0	\$0	\$0	\$3,815	\$3,815
Field Office Support	10.9	mo		\$139.00			\$0	\$1,515	\$0	\$0	\$1,515
Storage Trailer	10.9	mo				\$105.00	\$0	\$0	\$0	\$1,145	\$1,145
Equipment Mobilization/Demobilization	14	ea			\$100.00	\$352.00	\$0	\$0	\$1,400	\$4,928	\$6,328
Personnel Mobilization/Demobilization	16	ea			\$592.00		\$0	\$0	\$9,472	\$0	\$9,472
Construction Survey (2 surveys at 7.6 acres each)	15.2	ac	\$1,748.00				\$26,570	\$0	\$0	\$0	\$26,570
Site Utilities, Generator and Oiler	10.9	mo			\$6,216.00	0	\$0	\$0	\$67,754	\$15,203	\$82,958
Install Temporary Fence (Blaze Orange)	11,060	lf		\$1.63	\$1.16		\$0	\$18,028	\$12,830	\$0	\$30,857
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (See Table D-26)	1	ea		\$6,682.86	\$5,920.00	\$310.56	\$0	\$6,683	\$5,920	\$311	\$12,913
DECONTAMINATION											
Decontamination Crew (4 Laborers)	64	day			\$1,184.00		\$0	\$0	\$75,776	\$0	\$75,776
Water for Decon Process (1,000 gal/month)	3,048	gal		\$0.20			\$0	\$610	\$0	\$0	\$610
EXCAVATION											
Water Truck	97	day			\$296.00	\$80.00	\$0	\$0	\$28,712	\$7,760	\$36,472
Hydraulic Excavator (2 for 97 days)	194	day			\$296.00	\$559.90	\$0	\$0	\$57,424	\$108,622	\$166,046
Front End Loader	33	day			\$296.00	\$630.27	\$0	\$0	\$9,768	\$20,799	\$30,567
SITE RESTORATION											
Front End Loader, Overburden	42	day			\$296.00	\$630.27	\$0	\$0	\$12,432	\$26,471	\$38,903
Bulldozer, Overburden	42	day			\$296.00	\$656.42	\$0	\$0	\$12,432	\$27,570	\$40,002
Hydraulic Excavator, Borrow Material	28	day			\$296.00	\$559.90	\$0	\$0	\$8,288	\$15,677	\$23,965
Front End Loader, Borrow Material	28	day			\$296.00	\$630.27	\$0	\$0	\$8,288	\$17,647	\$25,935
Hauling Borrow Material, 5 Trucks, 28 days/each	140	day			\$296.00	\$398.55	\$0	\$0	\$41,440	\$55,797	\$97,237
Front End Loader, Borrow Material	28	day			\$296.00	\$630.27	\$0	\$0	\$8,288	\$17,647	\$25,935

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Table D-25. (Alternative 3), 216-Z-11 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equip- ment	Subcontract	Material	Labor	Equip- ment	
Bulldozer, Borrow Material	28	day			\$296.00	\$656.42	\$0	\$0	\$8,288	\$18,380	\$26,668
Fine Grading and Seeding (Lime, Fert, and Seed Incl.)	36,828	sy		\$0.26	\$1.19	\$0.18	\$0	\$9,575	\$43,825	\$6,629	\$60,030
Water Truck	70	day			\$296.00	\$80.00	\$0	\$0	\$20,720	\$5,600	\$26,320
MISCELLANEOUS											
Support Personnel	229	day			\$1,896.00		\$0	\$0	\$434,184	\$0	\$434,184
Post Construction Documents	680	hr			\$50.00		\$0	\$0	\$34,000	\$0	\$34,000
Construction Contractor Field Cost							\$26,570	\$65,011	\$902,693	\$356,333	\$1,350,606
Direct Markup on Labor @ 25%									\$225,673		\$225,673
Direct Markup on Materials @ 10%								\$6,501			\$6,501
Direct Markup on Subcontracts @ 10%							\$2,657				\$2,657
Construction Contractor G&A @ 26.5%							\$7,041	\$17,228	\$239,214	\$94,428	\$357,911
Construction Contractor Subtotal							\$36,268	\$88,740	\$1,367,580	\$450,761	\$1,943,348
Fluor Hanford G&A on Construction Contractor Cost @ 15%							\$5,440	\$13,311	\$205,137	\$67,614	\$291,502
Construction Contractor Total Cost							\$41,708	\$102,050	\$1,572,717	\$518,375	\$2,234,851
Fluor Hanford Total Cost (From Above)							\$58,359,200	\$1,949	\$1,339,758	\$65,160	\$59,766,067
Project Subtotal							\$58,400,908	\$104,000	\$2,912,475	\$583,536	\$62,000,918
Contingency on Total Field Costs @ 25%											\$15,500,229
TOTAL COST											\$77,501,147

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Table D-26. (Alternative 3), 216-Z-11 Ditch Representative Site, Calculation Sheet
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Decontamination Pad Construction											
Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
3" SCH 80 PVC Pipe	5	lf		\$1.63			\$0	\$8	\$0	\$0	\$8
Sump Pump	1	ea		\$2,005.00			\$0	\$2,005	\$0	\$0	\$2,005
Sump Pump Hoses (50 lf)	1	ea		\$493.00			\$0	\$493	\$0	\$0	\$493
Sump Construction (2)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76
Temporary Storage Tank (1,000 gal)	2	ea		\$1,674.00			\$0	\$3,348	\$0	\$0	\$3,348
4 Laborers, 5 days to Build/Remove	5	day			\$1,184.00		\$0	\$0	\$5,920	\$0	\$5,920
Subtotal Direct Cost							\$0.00	\$6,682.86	\$5,920.00	\$310.56	\$12,913

NOTE:

Cost of labor to run the decontamination pad provided under line item Decontamination Crew on Table D-25.

Table D-27. (Alternative 3), 216-A-25 Gable Mountain Pond Representative Site, Capital Cost
 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (2 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
FLUOR HANFORD COST											
OVERSIGHT											
Construction Oversight (Includes 1 RCT)	2,030	days			\$1,720.00		\$0	\$0	\$3,491,600	\$0	\$3,491,600
RCT on Excavator (2 for 1,067 days)	2,134	days			\$448.00		\$0	\$0	\$956,032	\$0	\$956,032
RCT Decontamination Crew (4 RCT)	627	days			\$1,792.00		\$0	\$0	\$1,123,584	\$0	\$1,123,584
SAMPLING CREWS AND SAMPLING											
Overburden Samples (6 Per Site)	6	ea	\$1,100.00				\$6,600	\$0	\$0	\$0	\$6,600
LLW Samples (1 per 845 lcy Contaminated Soil, or 6 Min)	939	ea	\$5,000.00				\$4,695,000	\$0	\$0	\$0	\$4,695,000
Site Certification Samples (1 per 6,264 sf, or 6 Min)	458	ea	\$5,000.00				\$2,290,000	\$0	\$0	\$0	\$2,290,000
QC Samples (5% of Total Samples)	70	ea	\$5,000.00				\$350,000	\$0	\$0	\$0	\$350,000
Air Sampling and Crew (Sampler and RCT)	1,067	days	\$1,000.00		\$896.00	\$500.00	\$1,067,000	\$0	\$956,032	\$533,500	\$2,556,532
Soil/Sediment Sampling Crew (Sampler 50% and RCT)	1,067	days			\$672.00		\$0	\$0	\$717,024	\$0	\$717,024
Site Cert Sampling Crew (Sampler and RCT, 3 samples/hr)	19	days			\$896.00		\$0	\$0	\$17,024	\$0	\$17,024
TRANSPORTATION AND DISPOSAL											
Transportation and Disposal of Rolloff Boxes to ERDF	62,694	ea	\$1,100.00				\$68,963,400	\$0	\$0	\$0	\$68,963,400
Fluor Hanford Field Cost							\$77,372,000	\$0	\$7,261,296	\$533,500	\$85,166,796
Fluor Hanford G & A on Labor Cost @ 15%									\$1,089,194		\$1,089,194
Fluor Hanford G & A on Material Cost @ 15%								\$0			\$0
Fluor Hanford G & A on Equipment Cost @ 15%										\$80,025	\$80,025
Fluor Hanford Total Cost							\$77,372,000	\$0	\$8,350,490	\$613,525	\$86,336,015
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Office Trailer	96.7	mo				\$350.00	\$0	\$0	\$0	\$33,845	\$33,845
Field Office Support	96.7	mo		\$139.00			\$0	\$13,441	\$0	\$0	\$13,441
Storage Trailer	96.7	mo				\$105.00	\$0	\$0	\$0	\$10,154	\$10,154
Equipment Mobilization/Demobilization	23	ea			\$100.00	\$352.00	\$0	\$0	\$2,300	\$8,096	\$10,396

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Table D-27. (Alternative 3), 216-A-25 Gable Mountain Pond Representative Site, Capital Cost
200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (2 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Personnel Mobilization/Demobilization	25	ea			\$592.00		\$0	\$0	\$14,800	\$0	\$14,800
Construction Survey (2 surveys at 78.9 acres each)	157.8	ac	\$1,748.00				\$275,834	\$0	\$0	\$0	\$275,834
Site Utilities, Generator and Oiler	96.7	mo			\$6,216.00	\$1,394.80	\$0	\$0	\$601,087	\$134,877	\$735,964
Install Temporary Fence (Blaze Orange)	11,016	lf		\$1.63	\$1.16		\$0	\$17,956	\$12,779	\$0	\$30,735
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (See Table D-28)	3	ea		\$6,682.86	\$5,920.00	\$310.56	\$0	\$20,049	\$17,760	\$932	\$38,740
DECONTAMINATION											
Decontamination Crew (4 Laborers)	627	day			\$1,184.00		\$0	\$0	\$742,368	\$0	\$742,368
Water for Decon Process (1,000 gal/month)	29,857	gal		\$0.20			\$0	\$5,971	\$0	\$0	\$5,971
EXCAVATION											
Water Truck	1,067	day			\$296.00	\$80.00	\$0	\$0	\$315,832	\$85,360	\$401,192
Hydraulic Excavator (2 for 1,067 days)	2,134	day			\$296.00	\$559.90	\$0	\$0	\$631,664	\$1,194,837	\$1,826,501
Front End Loader	440	day			\$296.00	\$630.27	\$0	\$0	\$130,240	\$277,317	\$407,557
SITE RESTORATION											
Front End Loader, Overburden (2 for 286 days)	572	day			\$296.00	\$630.27	\$0	\$0	\$169,312	\$360,513	\$529,825
Bulldozer, Overburden (2 for 286 days)	572	day			\$296.00	\$656.42	\$0	\$0	\$169,312	\$375,471	\$544,783
Hydraulic Excavator, Borrow Material (2 for 270 days)	540	day			\$296.00	\$559.90	\$0	\$0	\$159,840	\$302,349	\$462,189
Front End Loader, Borrow Material (2 for 270 days)	540	day			\$296.00	\$630.27	\$0	\$0	\$159,840	\$340,344	\$500,184
Hauling Borrow Material, 10 Trucks, 270 days/each	2,700	day			\$296.00	\$398.55	\$0	\$0	\$799,200	\$1,076,091	\$1,875,291
Front End Loader, Borrow Material (2 for 270 days)	540	day			\$296.00	\$630.27	\$0	\$0	\$159,840	\$340,344	\$500,184
Bulldozer, Borrow Material (2 for 270 days)	540	day			\$296.00	\$656.42	\$0	\$0	\$159,840	\$354,465	\$514,305
Fine Grading and Seeding (Lime, Fert, and Seed Incl.)	381,936	sy		\$0.26	\$1.19	\$0.18	\$0	\$99,303	\$454,504	\$68,748	\$622,556
Water Truck	556	day			\$296.00	\$80.00	\$0	\$0	\$164,576	\$44,480	\$209,056
MISCELLANEOUS											
Support Personnel	2,030	day			\$1,896.00		\$0	\$0	\$3,848,880	\$0	\$3,848,880
Post Construction Documents	680	hr			\$50.00		\$0	\$0	\$34,000	\$0	\$34,000
Construction Contractor Field Cost							\$275,834	\$185,321	\$8,749,426	\$5,010,554	\$14,221,135
Direct Markup on Labor @ 25%									\$2,187,356		\$2,187,356
Direct Markup on Materials @ 10%								\$18,532			\$18,532

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Table D-27. (Alternative 3), 216-A-25 Gable Mountain Pond Representative Site, Capital Cost
 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (2 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Direct Markup on Subcontracts @ 10%							\$27,583				\$27,583
Construction Contractor G&A @ 26.5%							\$73,096	\$49,110	\$2,318,598	\$1,327,797	\$3,768,601
Construction Contractor Subtotal							\$376,514	\$252,963	\$13,255,380	\$6,338,351	\$20,223,208
Fluor Hanford G&A on Construction Contractor Cost @ 15%							\$56,477	\$37,944	\$1,988,307	\$950,753	\$3,033,481
Construction Contractor Total Cost							\$432,991	\$290,907	\$15,243,687	\$7,289,104	\$23,256,689
Fluor Hanford Total Cost (From Above)							\$77,372,000	\$0	\$8,350,490	\$613,525	\$86,336,015
Project Subtotal							\$77,804,991	\$290,907	\$23,594,177	\$7,902,629	\$109,592,704
Contingency on Total Field Costs @ 25%											\$27,398,176
TOTAL COST											\$136,990,880

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Table D-28. (Alternative 3), 216-A-25 Gable Mountain Pond Representative Site, Calculation Sheet
 200-CW-5 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equipment	Sub-contract	Material	Labor	Equipment	
Decontamination Pad Construction											
Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
3" SCH 80 PVC Pipe	5	lf		\$1.63			\$0	\$8	\$0	\$0	\$8
Sump Pump	1	ea		\$2,005.00			\$0	\$2,005	\$0	\$0	\$2,005
Sump Pump Hoses (50 lf)	1	ea		\$493.00			\$0	\$493	\$0	\$0	\$493
Sump Construction (2)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76
Temporary Storage Tank (1,000 gal)	2	ea		\$1,674.00			\$0	\$3,348	\$0	\$0	\$3,348
4 Laborers, 5 days to Build/Remove	5	day			\$1,184.00		\$0	\$0	\$5,920	\$0	\$5,920
Subtotal Direct Cost							\$0.00	\$6,682.86	\$5,920.00	\$310.56	\$12,913

NOTE:

Cost of labor to run the decontamination pad provided under line item Decontamination Crew on Table D-27.
 Assume all decon pad materials replaced every 36 months.

Table D-29. (Alternative 3), 216-T-26 Crib Representative Site, Capital Cost
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (2 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
FLUOR HANFORD COST											
OVERSIGHT											
Construction Oversight (Includes 1 RCT)	1,338	days			\$1,720.00		\$0	\$0	\$2,301,360	\$0	\$2,301,360
RCT on Excavator (2 for 755 days)	1,510	days			\$448.00		\$0	\$0	\$676,480	\$0	\$676,480
RCT Decontamination Crew (4 RCT)	7	days			\$1,792.00		\$0	\$0	\$12,544	\$0	\$12,544
SAMPLING CREWS AND SAMPLING											
Overburden Samples (6 Per Site)	6	ea	\$1,100.00				\$6,600	\$0	\$0	\$0	\$6,600
LLW Samples (1 per 845 lcy Contaminated Soil, or 6 Min)	10	ea	\$5,000.00				\$50,000	\$0	\$0	\$0	\$50,000
Site Certification Samples (1 per 6,264 sf, or 6 Min)	80	ea	\$5,000.00				\$400,000	\$0	\$0	\$0	\$400,000
QC Samples (5% of Total Samples)	5	ea	\$5,000.00				\$25,000	\$0	\$0	\$0	\$25,000
Air Sampling and Crew (Sampler and RCT)	755	days	\$1,000.00		\$896.00	\$500.00	\$755,000	\$0	\$676,480	\$377,500	\$1,808,980
Soil/Sediment Sampling Crew (Sampler 50% and RCT)	755	days			\$672.00		\$0	\$0	\$507,360	\$0	\$507,360
Site Cert Sampling Crew (Sampler and RCT, 3 samples/hr)	4	days			\$672.00		\$0	\$0	\$2,688	\$0	\$2,688
TRANSPORTATION AND DISPOSAL											
Transportation and Disposal of Rolloff Boxes to ERDF	628	ea	\$1,100.00				\$690,800	\$0	\$0	\$0	\$690,800
Fluor Hanford Field Cost							\$1,927,400	\$0	\$4,176,912	\$377,500	\$6,481,812
Fluor Hanford G & A on Labor Cost @ 15%									\$626,537		\$626,537
Fluor Hanford G & A on Material Cost @ 15%								\$0			\$0
Fluor Hanford G & A on Equipment Cost @ 15%										\$56,625	\$56,625
Fluor Hanford Total Cost							\$1,927,400	\$0	\$4,803,449	\$434,125	\$7,164,974
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMobilIZATION AND FIELD SUPPORT											
Office Trailer	63.7	mo				\$350.00	\$0	\$0	\$0	\$22,295	\$22,295
Field Office Support	63.7	mo		\$139.00			\$0	\$8,854	\$0	\$0	\$8,854
Storage Trailer	63.7	mo				\$105.00	\$0	\$0	\$0	\$6,689	\$6,689
Equipment Mobilization/Demobilization	16	ea			\$100.00	\$352.00	\$0	\$0	\$1,600	\$5,632	\$7,232
Personnel Mobilization/Demobilization	18	ea			\$592.00		\$0	\$0	\$10,656	\$0	\$10,656
Construction Survey (2 surveys at 13.7 acres each)	27.4	ac	\$1,748.00				\$47,895	\$0	\$0	\$0	\$47,895
Site Utilities, Generator and Oiler	63.7	mo			\$6,216.00	80	\$0	\$0	\$395,959	\$88,849	\$484,808
Install Temporary Fence (Blaze Orange)	3,384	lf		\$1.63	\$1.16		\$0	\$5,516	\$3,925	\$0	\$9,441
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (See Table D-30)	2	ea		\$6,682.86	\$5,920.00	\$310.56	\$0	\$13,366	\$11,840	\$621	\$25,827
DECONTAMINATION											
Decontamination Crew (4 Laborers)	7	day			\$1,184.00		\$0	\$0	\$8,288	\$0	\$8,288
Water for Decon Process (1,000 gal/month)	333	gal		\$0.20			\$0	\$67	\$0	\$0	\$67

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Table D-29. (Alternative 3), 216-T-26 Crib Representative Site, Capital Cost
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (2 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
EXCAVATION											
Water Truck	755	day			\$296.00	\$80.00	\$0	\$0	\$223,480	\$60,400	\$283,880
Hydraulic Excavator (2 for 754 days)	1,510	day			\$296.00	\$559.90	\$0	\$0	\$446,960	\$845,456	\$1,292,416
Front End Loader	748	day			\$296.00	\$630.27	\$0	\$0	\$221,408	\$471,439	\$692,847
SITE RESTORATION											
Front End Loader, Overburden (2 for 485 days)	970	day			\$296.00	\$630.27	\$0	\$0	\$287,120	\$611,359	\$898,479
Bulldozer, Overburden (2 for 485 days)	970	day			\$296.00	\$656.42	\$0	\$0	\$287,120	\$636,725	\$923,845
Hydraulic Excavator, Borrow Material	6	day			\$296.00	\$559.90	\$0	\$0	\$1,776	\$3,359	\$5,135
Front End Loader, Borrow Material	6	day			\$296.00	\$630.27	\$0	\$0	\$1,776	\$3,782	\$5,558
Hauling Borrow Material, 5 Trucks, 6 days/each	30	day			\$296.00	\$398.55	\$0	\$0	\$8,880	\$11,957	\$20,837
Front End Loader, Borrow Material	6	day			\$296.00	\$630.27	\$0	\$0	\$1,776	\$3,782	\$5,558
Bulldozer, Borrow Material	6	day			\$296.00	\$656.42	\$0	\$0	\$1,776	\$3,939	\$5,715
Fine Grading and Seeding (Lime, Fert, and Seed Incl.)	66,270	sy		\$0.26	\$1.19	\$0.18	\$0	\$17,230	\$78,861	\$11,929	\$108,020
Water Truck	491	day			\$296.00	\$80.00	\$0	\$0	\$145,336	\$39,280	\$184,616
MISCELLANEOUS											
Support Personnel	1,338	day			\$1,896.00		\$0	\$0	\$2,536,848	\$0	\$2,536,848
Post Construction Documents	680	hr			\$50.00		\$0	\$0	\$34,000	\$0	\$34,000
Construction Contractor Field Cost							\$47,895	\$73,633	\$4,710,838	\$2,829,823	\$7,662,189
Direct Markup on Labor @ 25%									\$1,177,709		\$1,177,709
Direct Markup on Materials @ 10%							\$4,790	\$7,363			\$7,363
Direct Markup on Subcontracts @ 10%							\$12,692	\$19,513	\$1,248,372	\$749,903	\$2,030,480
Construction Contractor G&A @ 26.5%											
Construction Contractor Subtotal							\$65,377	\$100,509	\$7,136,919	\$3,579,726	\$10,882,531
Fluor Hanford G&A on Construction Contractor Cost @ 15%							\$9,807	\$15,076	\$1,070,538	\$536,959	\$1,632,380
Construction Contractor Total Cost							\$75,183	\$115,585	\$8,207,457	\$4,116,684	\$12,514,910
Fluor Hanford Total Cost (From Above)							\$1,927,400	\$0	\$4,803,449	\$434,125	\$7,164,974
Project Subtotal							\$2,002,583	\$115,585	\$13,010,906	\$4,550,809	\$19,679,884
Contingency on Total Field Costs @ 25%											\$4,919,971
TOTAL COST											\$24,599,855

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Table D-30 (Alternative 3), 216-T-26 Crib Representative Site, Calculation Sheet
 200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Decontamination Pad Construction											
Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
3" SCH 80 PVC Pipe	5	lf		\$1.63			\$0	\$8	\$0	\$0	\$8
Sump Pump	1	ea		\$2,005.00			\$0	\$2,005	\$0	\$0	\$2,005
Sump Pump Hoses (50 lf)	1	ea		\$493.00			\$0	\$493	\$0	\$0	\$493
Sump Construction (2)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76
Temporary Storage Tank (1,000 gal)	2	ea		\$1,674.00			\$0	\$3,348	\$0	\$0	\$3,348
4 Laborers, 5 days to Build/Remove	5	day			\$1,184.00		\$0	\$0	\$5,920	\$0	\$5,920
Subtotal Direct Cost							\$0.00	\$6,682.86	\$5,920.00	\$310.56	\$12,913

NOTE:

Cost of labor to run the decontamination pad provided under line item Decontamination Crew on Table D-29.
 Assume all decon pad materials replaced every 36 months.

Table D-31. (Alternative 4), 216-U-10 Pond Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
FLUOR HANFORD COST OVERSIGHT											
Construction Oversight (Includes 1 RCT)	375	days			\$1,720.00		\$0	\$0	\$645,000	\$0	\$645,000
RCT Decontamination Crew (4 RCTs)	1	days			\$1,792.00		\$0	\$0	\$1,792	\$0	\$1,792
SAMPLING CREWS AND SAMPLING											
Air Sampling Crew (Sampler and RCT)	149.0	days	\$1,000.00		\$896.00	\$500.00	\$149,000	\$0	\$133,504	\$74,500	\$357,004
Fluor Hanford Field Cost							\$149,000	\$0	\$780,296	\$74,500	\$1,003,796
Fluor Hanford G & A on Labor Cost @	15%						\$0	\$0	\$117,044	\$0	\$117,044
Fluor Hanford G & A on Material Cost @	15%						\$0	\$0	\$0	\$0	\$0
Fluor Hanford G & A on Equipment Cost @	15%						\$0	\$0	\$0	\$11,175	\$11,175
Fluor Hanford Total Cost							\$149,000	\$0	\$897,340	\$85,675	\$1,132,015
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Office Trailer	17.8	mo				\$350.00	\$0	\$0	\$0	\$6,230	\$6,230
Field Office Support	17.8	mo		\$139.00			\$0	\$2,474	\$0	\$0	\$2,474
Storage Trailer	17.8	mo				\$105.00	\$0	\$0	\$0	\$1,869	\$1,869
Equipment Mobilization/Demobilization	24	ea			\$100.00	\$352.00	\$0	\$0	\$2,400	\$8,448	\$10,848
Personnel Mobilization/Demobilization	26	ea			\$592.00		\$0	\$0	\$15,392	\$0	\$15,392
Construction Survey (8 surveys 41.84 acres each)	334.72	ac	\$1,748.00				\$585,091	\$0	\$0	\$0	\$585,091
Site Utilities, Generator and Oiler	17.8	mo			\$6,216.00	\$1,394.80	\$0	\$0	\$110,645	\$24,827	\$135,472
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (see Table D-34)	1	ea		\$836.86		\$1,360.56	\$0	\$837	\$0	\$1,361	\$2,197
DYNAMIC COMPACTION											
Mobilization/Demobilization of Crane (4 cranes)	4	ea			\$5,375.00	\$5,225.00	\$0	\$0	\$21,500	\$20,900	\$42,400
Crane, Compaction with Oiler, (add one day for decon)	77	day			\$2,368.00	\$7,406.40	\$0	\$0	\$182,336	\$570,293	\$752,629
Water Truck	76	day			\$296.00	\$80.00	\$0	\$0	\$22,496	\$6,080	\$28,576

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Table D-31. (Alternative 4), 216-U-10 Pond Representative Site, Capital Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
DECONTAMINATION											
Water for Decon Process (1,000 gal/month)	50	gal		\$0.20			\$0	\$10	\$0	\$0	\$10
CAPPING											
Grading Fill, Excavate/Load (185,470 cy)	73	day			\$1,184.00	\$2,380.34	\$0	\$0	\$86,432	\$173,765	\$260,197
Grading Fill, Hauling, 10 Trucks, 73 Days/Each	730	day			\$296.00	\$398.55	\$0	\$0	\$216,080	\$290,943	\$507,023
Grading Fill, Front End Loader	73	day			\$592.00	\$1,260.53	\$0	\$0	\$43,216	\$92,019	\$135,235
Grading Fill, Bulldozer	73	day			\$592.00	\$1,312.83	\$0	\$0	\$43,216	\$95,837	\$139,053
Grading Fill, Grader	73	day			\$296.00	\$656.42	\$0	\$0	\$21,608	\$47,918	\$69,526
Grading Fill, Vibratory Roller	73	day			\$592.00	\$707.96	\$0	\$0	\$43,216	\$51,681	\$94,897
Asphalt Base-course (4" thick)	165,107	sy	\$10.70				\$1,766,645	\$0	\$0	\$0	\$1,766,645
Asphalt Paving (6" thick)	165,107	sy	\$15.40				\$2,542,648	\$0	\$0	\$0	\$2,542,648
Purchase Lateral Drainage Layer	27,323	cy		\$44.47			\$0	\$1,215,054	\$0	\$0	\$1,215,054
Lateral Drainage Layer, Front End Loader	11	day			\$592.00	\$1,260.53	\$0	\$0	\$6,512	\$13,866	\$20,378
Lateral Drainage Layer, Bulldozer	11	day			\$592.00	\$1,312.83	\$0	\$0	\$6,512	\$14,441	\$20,953
Lateral Drainage Layer, Grader	11	day			\$296.00	\$656.42	\$0	\$0	\$3,256	\$7,221	\$10,477
Lateral Drainage Layer, Vibratory Roller	11	day			\$592.00	\$707.96	\$0	\$0	\$6,512	\$7,788	\$14,300
Purchase Gravel Filter Layer	27,233	cy		\$45.67			\$0	\$1,243,731	\$0	\$0	\$1,243,731
Gravel Filter Layer, Front End Loader	11	day			\$592.00	\$1,260.53	\$0	\$0	\$6,512	\$13,866	\$20,378
Gravel Filter Layer, Bulldozer	11	day			\$592.00	\$1,312.83	\$0	\$0	\$6,512	\$14,441	\$20,953
Gravel Filter Layer, Grader	11	day			\$296.00	\$656.42	\$0	\$0	\$3,256	\$7,221	\$10,477
Gravel Filter Layer, Vibratory Roller	11	day			\$592.00	\$707.96	\$0	\$0	\$6,512	\$7,788	\$14,300
Purchase Sand Layer	26,573	cy		\$41.42			\$0	\$1,100,654	\$0	\$0	\$1,100,654
Sand Filter Layer, Front End Loader	11	day			\$592.00	\$1,260.53	\$0	\$0	\$6,512	\$13,866	\$20,378
Sand Filter Layer, Bulldozer	11	day			\$592.00	\$1,312.83	\$0	\$0	\$6,512	\$14,441	\$20,953
Sand Filter Layer, Grader	11	day			\$296.00	\$656.42	\$0	\$0	\$3,256	\$7,221	\$10,477
Sand Filter Layer, Vibratory Roller	11	day			\$592.00	\$707.96	\$0	\$0	\$6,512	\$7,788	\$14,300
Geotextile (Non-woven)	159,440	sy		\$1.10		\$0.06	\$0	\$175,384	\$0	\$9,566	\$184,950
Cap Berm, Excavate/Load (5,209 cy)	4	day			\$1,184.00	\$2,380.34	\$0	\$0	\$4,736	\$9,521	\$14,257
Cap Berm, Hauling, 10 Trucks, 4 Days/Each	40	day			\$296.00	\$398.55	\$0	\$0	\$11,840	\$15,942	\$27,782
Cap Berm, Front End Loader	4	day			\$592.00	\$1,260.53	\$0	\$0	\$2,368	\$5,042	\$7,410
Cap Berm, Bulldozer	4	day			\$592.00	\$1,312.83	\$0	\$0	\$2,368	\$5,251	\$7,619
Cap Berm, Vibratory Roller	4	day			\$592.00	\$707.96	\$0	\$0	\$2,368	\$2,832	\$5,200
Compacted Silt Loam, Excavate/Load (86,876 cy)	34	day			\$1,184.00	\$2,380.34	\$0	\$0	\$40,256	\$80,932	\$121,188

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Table D-31. (Alternative 4), 216-U-10 Pond Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Compacted Silt Loam Hauling, 10 Trucks, 34 Days/Ea	340	day			\$296.00	\$398.55	\$0	\$0	\$100,640	\$135,508	\$236,148
Compacted Silt Loam Layer, Front End Loader	34	day			\$592.00	\$1,260.53	\$0	\$0	\$20,128	\$42,858	\$62,986
Compacted Silt Loam Layer, Bulldozer	34	day			\$592.00	\$1,312.83	\$0	\$0	\$20,128	\$44,636	\$64,764
Compacted Silt Loam Layer, Grader	34	day			\$296.00	\$656.42	\$0	\$0	\$10,064	\$22,318	\$32,382
Compacted Silt Loam Layer, Vibratory Roller	34	day			\$592.00	\$707.96	\$0	\$0	\$20,128	\$24,071	\$44,199
Silt Loam, Excavate/Load (79,070 cy)	35	day			\$1,184.00	\$2,380.34	\$0	\$0	\$41,440	\$83,312	\$124,752
Purchase Pea Gravel Layer	8,786	cy		\$55.67			\$0	\$489,117	\$0	\$0	\$489,117
Silt Loam Hauling, 10 Trucks, 35 Day/Each	350	day			\$296.00	\$398.55	\$0	\$0	\$103,600	\$139,493	\$243,093
Silt Loam/Pea Gravel Layer, Front End Loader	35	day			\$592.00	\$1,260.53	\$0	\$0	\$20,720	\$44,119	\$64,839
Silt Loam/Pea Gravel Layer, Bulldozer with Tiller	35	day			\$592.00	\$1,903.04	\$0	\$0	\$20,720	\$66,606	\$87,326
Silt Loam/Pea Gravel Layer, Grader	35	day			\$296.00	\$656.42	\$0	\$0	\$10,360	\$22,975	\$33,335
Purchase Riprap	3,620	cy		\$45.42			\$0	\$164,420	\$0	\$0	\$164,420
Riprap, Front End Loader	5	day			\$592.00	\$1,260.53	\$0	\$0	\$2,960	\$6,303	\$9,263
Riprap, Hydraulic Excavator	5	day			\$592.00	\$1,119.81	\$0	\$0	\$2,960	\$5,599	\$8,559
Install Cap Monitoirng System	1	ea		\$5,000.00			\$0	\$5,000	\$0	\$0	\$5,000
Water Truck	360	day			\$296.00	\$80.00	\$0	\$0	\$106,560	\$28,800	\$135,360
VEGETATION											
Fine Grade & Seed Topsoil	159,023	sy		\$0.26	\$1.19	\$0.18	\$0	\$41,346	\$189,237	\$28,624	\$259,207
MISCELLANEOUS											
Support Personnel	375	day			\$1,896.00		\$0	\$0	\$711,000	\$0	\$711,000
Labor (4 laborers @ \$37/hour)	375	day			\$1,184.00		\$0	\$0	\$444,000	\$0	\$444,000
Post Construction Documents	160	hr			\$50.00		\$0	\$0	\$8,000	\$0	\$8,000
Construction Contractor Field Cost							\$4,894,383	\$4,466,627	\$2,774,946	\$2,348,758	\$14,484,714
Direct Markup on Labor @	25%						\$0	\$0	\$693,737	\$0	\$693,737
Direct Markup on Materials @	10%						\$0	\$446,663	\$0	\$0	\$446,663
Direct Markup on Subcontracts @	10%						\$489,438	\$0	\$0	\$0	\$489,438
Construction Contractor G&A @	26.5%						\$1,297,012	\$1,183,656	\$735,361	\$622,421	\$3,838,449
Construction Contractor Subtotal							\$6,680,833	\$6,096,945	\$4,204,043	\$2,971,179	\$19,953,001

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Table D-31. (Alternative 4), 216-U-10 Pond Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Fluor Hanford G&A on Construction Contractor Cost @	15%						\$1,002,125	\$914,542	\$630,607	\$445,677	\$2,992,950
Construction Contractor Total Cost							\$7,682,958	\$7,011,487	\$4,834,650	\$3,416,856	\$22,945,951
Fluor Hanford Total Cost (From Above)							\$149,000	\$0	\$897,340	\$85,675	\$1,132,015
Project Subtotal							\$7,831,958	\$7,011,487	\$5,731,990	\$3,502,531	\$24,077,967
Contingency on Field Costs @	25%										\$6,019,492
TOTAL COST											\$30,097,458

Table D-32 (Alternative 4), 216-U-10 Pond Representative Site, Periodic Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Item Cost		Notes
	Annually	per 5 Years	
Site Inspection	\$27,328		Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 1,518,645 ft ² .
Radiation Survey of Surface Soil	\$304,000		Cost is based on \$1,000 for every 5,000 square feet (Site = 1,518,645 ft ²)
Cover Maintenance	\$169,124		Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Reporting	\$10,000		Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000	Prepare Site Condition Report every 5 years.
TOTALS	\$510,452	\$20,000	

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Table D-33 (Alternative 4), 216-U-10 Pond Representative Site,
 Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$30,097,458		\$30,097,458	1.0000	\$30,097,458
1		\$510,452	\$510,452	0.9690	\$494,628
2		\$510,452	\$510,452	0.9389	\$479,263
3		\$510,452	\$510,452	0.9098	\$464,409
4		\$510,452	\$510,452	0.8816	\$450,014
5		\$530,452	\$530,452	0.8543	\$453,165
6		\$510,452	\$510,452	0.8278	\$422,552
7		\$510,452	\$510,452	0.8021	\$409,433
8		\$510,452	\$510,452	0.7773	\$396,774
9		\$510,452	\$510,452	0.7532	\$384,472
10		\$530,452	\$530,452	0.7298	\$387,124
11		\$510,452	\$510,452	0.7072	\$360,992
12		\$510,452	\$510,452	0.6852	\$349,762
13		\$510,452	\$510,452	0.6640	\$338,940
14		\$510,452	\$510,452	0.6434	\$328,425
15		\$530,452	\$530,452	0.6235	\$330,737
16		\$510,452	\$510,452	0.6041	\$308,364
17		\$510,452	\$510,452	0.5854	\$298,819
18		\$510,452	\$510,452	0.5672	\$289,528
19		\$510,452	\$510,452	0.5496	\$280,544
20		\$530,452	\$530,452	0.5326	\$282,519
21		\$510,452	\$510,452	0.5161	\$263,444
22		\$510,452	\$510,452	0.5001	\$255,277
23		\$510,452	\$510,452	0.4846	\$247,365
24		\$510,452	\$510,452	0.4696	\$239,708
25		\$530,452	\$530,452	0.4550	\$241,356
26		\$510,452	\$510,452	0.4409	\$225,058
27		\$510,452	\$510,452	0.4272	\$218,065
28		\$510,452	\$510,452	0.4140	\$211,327
29		\$510,452	\$510,452	0.4011	\$204,742
30		\$530,452	\$530,452	0.3887	\$206,187
31		\$510,452	\$510,452	0.3766	\$192,236
32		\$510,452	\$510,452	0.3650	\$186,315
33		\$510,452	\$510,452	0.3536	\$180,496
34		\$510,452	\$510,452	0.3427	\$174,932
35		\$530,452	\$530,452	0.3321	\$176,163
36		\$510,452	\$510,452	0.3218	\$164,263
37		\$510,452	\$510,452	0.3118	\$159,159
38		\$510,452	\$510,452	0.3021	\$154,208
39		\$510,452	\$510,452	0.2927	\$149,409
40		\$530,452	\$530,452	0.2837	\$150,489
41		\$510,452	\$510,452	0.2749	\$140,323
42		\$510,452	\$510,452	0.2664	\$135,984
43		\$510,452	\$510,452	0.2581	\$131,748
44		\$510,452	\$510,452	0.2501	\$127,664
45		\$530,452	\$530,452	0.2423	\$128,528
46		\$510,452	\$510,452	0.2348	\$119,854

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Table D-33 (Alternative 4), 216-U-10 Pond Representative Site,
 Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
47		\$510,452	\$510,452	0.2275	\$116,128
48		\$510,452	\$510,452	0.2205	\$112,555
49		\$510,452	\$510,452	0.2136	\$109,033
50		\$530,452	\$530,452	0.2070	\$109,804
51		\$510,452	\$510,452	0.2006	\$102,397
52		\$510,452	\$510,452	0.1944	\$99,232
53		\$510,452	\$510,452	0.1884	\$96,169
54		\$510,452	\$510,452	0.1825	\$93,157
55		\$530,452	\$530,452	0.1769	\$93,837
56		\$510,452	\$510,452	0.1714	\$87,491
57		\$510,452	\$510,452	0.1661	\$84,786
58		\$510,452	\$510,452	0.1609	\$82,132
59		\$510,452	\$510,452	0.1559	\$79,579
60		\$530,452	\$530,452	0.1511	\$80,151
61		\$510,452	\$510,452	0.1464	\$74,730
62		\$510,452	\$510,452	0.1419	\$72,433
63		\$510,452	\$510,452	0.1375	\$70,187
64		\$510,452	\$510,452	0.1332	\$67,992
65		\$530,452	\$530,452	0.1291	\$68,481
66		\$510,452	\$510,452	0.1251	\$63,858
67		\$510,452	\$510,452	0.1212	\$61,867
68		\$510,452	\$510,452	0.1174	\$59,927
69		\$510,452	\$510,452	0.1138	\$58,089
70		\$530,452	\$530,452	0.1103	\$58,509
71		\$510,452	\$510,452	0.1068	\$54,516
72		\$510,452	\$510,452	0.1035	\$52,832
73		\$510,452	\$510,452	0.1003	\$51,198
74		\$510,452	\$510,452	0.0972	\$49,616
75		\$530,452	\$530,452	0.0942	\$49,969
76		\$510,452	\$510,452	0.0913	\$46,604
77		\$510,452	\$510,452	0.0884	\$45,124
78		\$510,452	\$510,452	0.0857	\$43,746
79		\$510,452	\$510,452	0.0830	\$42,368
80		\$530,452	\$530,452	0.0805	\$42,701
81		\$510,452	\$510,452	0.0780	\$39,815
82		\$510,452	\$510,452	0.0756	\$38,590
83		\$510,452	\$510,452	0.0732	\$37,365
84		\$510,452	\$510,452	0.0709	\$36,191
85		\$530,452	\$530,452	0.0687	\$36,442
86		\$510,452	\$510,452	0.0666	\$33,996
87		\$510,452	\$510,452	0.0645	\$32,924
88		\$510,452	\$510,452	0.0625	\$31,903
89		\$510,452	\$510,452	0.0606	\$30,933
90		\$530,452	\$530,452	0.0587	\$31,138
91		\$510,452	\$510,452	0.0569	\$29,045
92		\$510,452	\$510,452	0.0551	\$28,126
93		\$510,452	\$510,452	0.0534	\$27,258

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Table D-33 (Alternative 4), 216-U-10 Pond Representative Site,
 Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
94		\$510,452	\$510,452	0.0518	\$26,441
95		\$530,452	\$530,452	0.0502	\$26,629
96		\$510,452	\$510,452	0.0486	\$24,808
97		\$510,452	\$510,452	0.0471	\$24,042
98		\$510,452	\$510,452	0.0456	\$23,277
99		\$510,452	\$510,452	0.0442	\$22,562
100		\$530,452	\$530,452	0.0429	\$22,756
101		\$510,452	\$510,452	0.0415	\$21,184
102		\$510,452	\$510,452	0.0402	\$20,520
103		\$510,452	\$510,452	0.0390	\$19,908
104		\$510,452	\$510,452	0.0378	\$19,295
105		\$530,452	\$530,452	0.0366	\$19,415
106		\$510,452	\$510,452	0.0355	\$18,121
107		\$510,452	\$510,452	0.0344	\$17,560
108		\$510,452	\$510,452	0.0333	\$16,998
109		\$510,452	\$510,452	0.0323	\$16,488
110		\$530,452	\$530,452	0.0313	\$16,603
111		\$510,452	\$510,452	0.0303	\$15,467
112		\$510,452	\$510,452	0.0294	\$15,007
113		\$510,452	\$510,452	0.0285	\$14,548
114		\$510,452	\$510,452	0.0276	\$14,088
115		\$530,452	\$530,452	0.0267	\$14,163
116		\$510,452	\$510,452	0.0259	\$13,221
117		\$510,452	\$510,452	0.0251	\$12,812
118		\$510,452	\$510,452	0.0243	\$12,404
119		\$510,452	\$510,452	0.0236	\$12,047
120		\$530,452	\$530,452	0.0228	\$12,094
121		\$510,452	\$510,452	0.0221	\$11,281
122		\$510,452	\$510,452	0.0214	\$10,924
123		\$510,452	\$510,452	0.0208	\$10,617
124		\$510,452	\$510,452	0.0201	\$10,260
125		\$530,452	\$530,452	0.0195	\$10,344
126		\$510,452	\$510,452	0.0189	\$9,648
127		\$510,452	\$510,452	0.0183	\$9,341
128		\$510,452	\$510,452	0.0177	\$9,035
129		\$510,452	\$510,452	0.0172	\$8,780
130		\$530,452	\$530,452	0.0167	\$8,859
131		\$510,452	\$510,452	0.0161	\$8,218
132		\$510,452	\$510,452	0.0156	\$7,963
133		\$510,452	\$510,452	0.0152	\$7,759
134		\$510,452	\$510,452	0.0147	\$7,504
135		\$530,452	\$530,452	0.0142	\$7,532
136		\$510,452	\$510,452	0.0138	\$7,044
137		\$510,452	\$510,452	0.0134	\$6,840
138		\$510,452	\$510,452	0.0129	\$6,585
139		\$510,452	\$510,452	0.0125	\$6,381
140		\$530,452	\$530,452	0.0122	\$6,472

Table D-33 (Alternative 4), 216-U-10 Pond Representative Site,
 Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
141		\$510,452	\$510,452	0.0118	\$6,023
142		\$510,452	\$510,452	0.0114	\$5,819
143		\$510,452	\$510,452	0.0111	\$5,666
144		\$510,452	\$510,452	0.0107	\$5,462
145		\$530,452	\$530,452	0.0104	\$5,517
146		\$510,452	\$510,452	0.0101	\$5,156
147		\$510,452	\$510,452	0.0098	\$5,002
148		\$510,452	\$510,452	0.0094	\$4,798
149		\$510,452	\$510,452	0.0092	\$4,696
150		\$530,452	\$530,452	0.0089	\$4,721
NON-DISCOUNTED COST		\$107,265,236		TOTAL PRESENT WORTH	\$46,023,850

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where $e = 3.2\%$ and $n =$ year (1 - 150).

Table D-34. (Alternative 4), 216-U-10 Pond Representative Site, Calculation Sheet
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Cover Maintenance (Purchase, Deliver, and Place Topsoil) Annual Cost											
Purchase Pea Gravel (Includes Purchase and Delivery)	1,125	cy		\$55.67			\$0	\$62,629	\$0	\$0	\$62,629
Silt Loam, Excavate/Load (10,124 cy)	9	day			\$592.00	\$1,190.17	\$0	\$0	\$5,328	\$10,712	\$16,040
Silt Loam Hauling, 5 Trucks, 9 Day/Each	45	day			\$296.00	\$398.55	\$0	\$0	\$13,320	\$17,935	\$31,255
Equipment Mob/Demob	9	ea			\$100.00	\$352.00	\$0	\$0	\$900	\$3,168	\$4,068
Place Silt Loam/Pea Gravel, Front End Loader	9	day			\$296.00	\$630.27	\$0	\$0	\$2,664	\$5,672	\$8,336
Place Silt Loam/Pea Gravel, Bulldozer with Tiller	9	day			\$296.00	\$951.52	\$0	\$0	\$2,664	\$8,564	\$11,228
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	16,874	sy		\$0.26	\$1.19	\$0.18	\$0	\$4,387	\$20,080	\$3,037	\$27,505
Oversight	18	days			\$448.00		\$0	\$0	\$8,064	\$0	\$8,064

Total Cost	\$0	\$67,016	\$53,020	\$49,088	\$169,124
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Decontamination Pad Construction											
Decon Pad - Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Decon Pads -Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
Decon Pads - 3" SCH 80 PVC Pipe	5	lf		\$1.63		\$0.00	\$0	\$8	\$0	\$0	\$8
Decon Pads - Sump Pump (2 for 1.4 months)	2.8	mo				\$375.00	\$0	\$0	\$0	\$1,050	\$1,050
Decon Pads - Sump Construction (1)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76

Total Cost	\$0	\$837	\$0	\$1,361	\$2,197
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Note:

- The decontamination pad cost for Alternative 4 is less expensive than the decontamination pad for Alternative 3 because the Alternative 4 decontamination pad usage is expected to be only 1 day, where for Alternative 3 decontamination pad is expected to be used day after day for long periods of time.

Table D-35. (Alternative 4), 216-U-14 Ditch Representative Site, Capital Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
FLUOR HANFORD COST											
OVERSIGHT											
Construction Oversight (Includes 1 RCT)	238	days			\$1,720.00		\$0	\$0	\$409,360	\$0	\$409,360
RCT Decontamination Crew (4 RCTs)	1	days			\$1,792.00		\$0	\$0	\$1,792	\$0	\$1,792
SAMPLING CREWS AND SAMPLING											
Air Sampling Crew (Sampler and RCT)	102	days	\$1,000.00		\$896.00	\$500.00	\$102,000	\$0	\$91,392	\$51,000	\$244,392
Fluor Hanford Field Cost							\$102,000	\$0	\$502,544	\$51,000	\$655,544
Fluor Hanford G & A on Labor Cost @	15%						\$0	\$0	\$75,382	\$0	\$75,382
Fluor Hanford G & A on Material Cost @	15%						\$0	\$0	\$0	\$0	\$0
Fluor Hanford G & A on Equipment Cost @	15%						\$0	\$0	\$0	\$7,650	\$7,650
Fluor Hanford Total Cost							\$102,000	\$0	\$577,926	\$58,650	\$738,576
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Office Trailer	11.3	mo				\$350.00	\$0	\$0	\$0	\$3,955	\$3,955
Field Office Support	11.3	mo		\$139.00			\$0	\$1,571	\$0	\$0	\$1,571
Storage Trailer	11.3	mo				\$105.00	\$0	\$0	\$0	\$1,187	\$1,187
Equipment Mobilization/Demobilization	14	ea			\$100.00	\$352.00	\$0	\$0	\$1,400	\$4,928	\$6,328
Personnel Mobilization/Demobilization	16	ea			\$592.00		\$0	\$0	\$9,472	\$0	\$9,472
Construction Survey (8 surveys 14.83 acres each)	118.64	ac	\$1,748.00				\$207,383	\$0	\$0	\$0	\$207,383
Site Utilities, Generator and Oiler	11.3	mo			\$6,216.00	0	\$0	\$0	\$70,241	\$15,761	\$86,002
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (see Table D-38)	1	ea		\$836.86		6	\$0	\$837	\$0	\$1,361	\$2,197
DYNAMIC COMPACTION											
Mobilization/Demobilization of Crane (2 cranes)	2	ea			\$5,375.00	\$5,225.00	\$0	\$0	\$10,750	\$10,450	\$21,200
Crane, Compaction with Oiler, (add one day for decon)	55	day			\$1,184.00	0	\$0	\$0	\$65,120	\$203,676	\$268,796
Water Truck	54	day			\$296.00	\$80.00	\$0	\$0	\$15,984	\$4,320	\$20,304
DECONTAMINATION											
Water for Decon Process (1,000 gal/month)	50	gal		\$0.20			\$0	\$10	\$0	\$0	\$10

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Table D-35. (Alternative 4), 216-U-14 Ditch Representative Site, Capital Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
CAPPING											
Grading Fill, Excavate/Load (61,661 cy)	48	day			\$592.00	\$1,190.17	\$0	\$0	\$28,416	\$57,128	\$85,544
Grading Fill, Hauling, 5 Trucks, 48 Days/Each	240	day			\$296.00	\$398.55	\$0	\$0	\$71,040	\$95,653	\$166,693
Grading Fill, Front End Loader	48	day			\$296.00	\$630.27	\$0	\$0	\$14,208	\$30,253	\$44,461
Grading Fill, Bulldozer	48	day			\$296.00	\$656.42	\$0	\$0	\$14,208	\$31,508	\$45,716
Grading Fill, Grader	48	day			\$296.00	\$656.42	\$0	\$0	\$14,208	\$31,508	\$45,716
Grading Fill, Vibratory Roller	48	day			\$296.00	\$353.98	\$0	\$0	\$14,208	\$16,991	\$31,199
Asphalt Base-course (4" thick)	51,162	sy	\$10.70				\$547,433	\$0	\$0	\$0	\$547,433
Asphalt Paving (6" thick)	51,162	sy	\$15.40				\$787,895	\$0	\$0	\$0	\$787,895
Purchase Lateral Drainage Layer	8,059	cy		\$44.47			\$0	\$358,384	\$0	\$0	\$358,384
Lateral Drainage Layer, Front End Loader	7	day			\$296.00	\$630.27	\$0	\$0	\$2,072	\$4,412	\$6,484
Lateral Drainage Layer, Bulldozer	7	day			\$296.00	\$656.42	\$0	\$0	\$2,072	\$4,595	\$6,667
Lateral Drainage Layer, Grader	7	day			\$296.00	\$656.42	\$0	\$0	\$2,072	\$4,595	\$6,667
Lateral Drainage Layer, Vibratory Roller	7	day			\$296.00	\$353.98	\$0	\$0	\$2,072	\$2,478	\$4,550
Purchase Gravel Filter Layer	7,843	cy		\$45.67			\$0	\$358,190	\$0	\$0	\$358,190
Gravel Filter Layer, Front End Loader	6	day			\$296.00	\$630.27	\$0	\$0	\$1,776	\$3,782	\$5,558
Gravel Filter Layer, Bulldozer	6	day			\$296.00	\$656.42	\$0	\$0	\$1,776	\$3,939	\$5,715
Gravel Filter Layer, Grader	6	day			\$296.00	\$656.42	\$0	\$0	\$1,776	\$3,939	\$5,715
Gravel Filter Layer, Vibratory Roller	6	day			\$296.00	\$353.98	\$0	\$0	\$1,776	\$2,124	\$3,900
Purchase Sand Layer	6,256	cy		\$41.42			\$0	\$259,124	\$0	\$0	\$259,124
Sand Filter Layer, Front End Loader	5	day			\$296.00	\$630.27	\$0	\$0	\$1,480	\$3,151	\$4,631
Sand Filter Layer, Bulldozer	5	day			\$296.00	\$656.42	\$0	\$0	\$1,480	\$3,282	\$4,762
Sand Filter Layer, Grader	5	day			\$296.00	\$656.42	\$0	\$0	\$1,480	\$3,282	\$4,762
Sand Filter Layer, Vibratory Roller	5	day			\$296.00	\$353.98	\$0	\$0	\$1,480	\$1,770	\$3,250
Geotextile (Non-woven)	37,534	sy		\$1.10		\$0.06	\$0	\$41,287	\$0	\$2,252	\$43,539
						\$1,190.17					
Cap Berm, Excavate/Load (12,606 cy)	20	day			\$592.00	7	\$0	\$0	\$11,840	\$23,803	\$35,643
Cap Berm, Hauling, 5 Trucks, 20 Days/Each	100	day			\$296.00	\$398.55	\$0	\$0	\$29,600	\$39,855	\$69,455
Cap Berm, Front End Loader	20	day			\$296.00	\$630.27	\$0	\$0	\$5,920	\$12,605	\$18,525
Cap Berm, Bulldozer	20	day			\$296.00	\$656.42	\$0	\$0	\$5,920	\$13,128	\$19,048
Cap Berm, Vibratory Roller	20	day			\$296.00	\$353.98	\$0	\$0	\$5,920	\$7,080	\$13,000
Compacted Silt Loam, Excavate/Load (16,723 cy)	13	day			\$592.00	7	\$0	\$0	\$7,696	\$15,472	\$23,168
Compacted Silt Loam Hauling, 5 Trucks, 13 Days/Ea	65	day			\$296.00	\$398.55	\$0	\$0	\$19,240	\$25,906	\$45,146
Compacted Silt Loam Layer, Front End Loader	13	day			\$296.00	\$630.27	\$0	\$0	\$3,848	\$8,193	\$12,041
Compacted Silt Loam Layer, Bulldozer	13	day			\$296.00	\$656.42	\$0	\$0	\$3,848	\$8,533	\$12,381
Compacted Silt Loam Layer, Grader	13	day			\$296.00	\$656.42	\$0	\$0	\$3,848	\$8,533	\$12,381

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Table D-35. (Alternative 4), 216-U-14 Ditch Representative Site, Capital Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Compacted Silt Loam Layer, Vibratory Roller	13	day			\$296.00	\$353.98	\$0	\$0	\$3,848	\$4,602	\$8,450
Silt Loam, Excavate/Load (17,191 cy)	15	day			\$592.00	7	\$0	\$0	\$8,880	\$17,853	\$26,733
Purchase Pea Gravel Layer	1,910	cy		\$55.67			\$0	\$106,330	\$0	\$0	\$106,330
Silt Loam Hauling, 5 Trucks, 15 Day/Each	75	day			\$296.00	\$398.55	\$0	\$0	\$22,200	\$29,891	\$52,091
Silt Loam/Pea Gravel Layer, Front End Loader	15	day			\$296.00	\$630.27	\$0	\$0	\$4,440	\$9,454	\$13,894
Silt Loam/Pea Gravel Layer, Bulldozer with Tiller	15	day			\$296.00	\$951.52	\$0	\$0	\$4,440	\$14,273	\$18,713
Silt Loam/Pea Gravel Layer, Grader	15	day			\$296.00	\$656.42	\$0	\$0	\$4,440	\$9,846	\$14,286
Purchase Riprap	8,686	cy		\$45.42			\$0	\$394,518	\$0	\$0	\$394,518
Riprap, Front End Loader	11	day			\$296.00	\$630.27	\$0	\$0	\$3,256	\$6,933	\$10,189
Riprap, Hydraulic Excavator	11	day			\$296.00	\$559.90	\$0	\$0	\$3,256	\$6,159	\$9,415
Install Cap Monitoring System	1	ea		\$5,000.00			\$0	\$5,000	\$0	\$0	\$5,000
Water Truck	223	day			\$296.00	\$80.00	\$0	\$0	\$66,008	\$17,840	\$83,848
VEGETATION											
Fine Grade & Seed Topsoil	36,523	sy		\$0.26	\$1.19	\$0.18	\$0	\$9,496	\$43,462	\$6,574	\$59,532
MISCELLANEOUS											
Support Personnel	238	day			\$1,896.00		\$0	\$0	\$451,248	\$0	\$451,248
Labor (4 laborers @ \$37/hour)	238	day			\$1,184.00		\$0	\$0	\$281,792	\$0	\$281,792
Post Construction Documents	160	hr			\$50.00		\$0	\$0	\$8,000	\$0	\$8,000
Construction Contractor Field Cost							\$1,542,711	\$1,563,346	\$1,354,969	\$841,145	\$5,302,171
Direct Markup on Labor @	25%						\$0	\$0	\$338,742	\$0	\$338,742
Direct Markup on Materials @	10%						\$0	\$156,335	\$0	\$0	\$156,335
Direct Markup on Subcontracts @	10%						\$154,271	\$0	\$0	\$0	\$154,271
Construction Contractor G&A @	26.5%						\$408,818	\$414,287	\$359,067	\$222,903	\$1,405,075
Construction Contractor Subtotal							\$2,105,800	\$2,133,967	\$2,052,778	\$1,064,048	\$7,356,594
Fluor Hanford G&A on Construction Contractor Cost @	15%						\$315,870	\$320,095	\$307,917	\$159,607	\$1,103,489
Construction Contractor Total Cost							\$2,421,670	\$2,454,062	\$2,360,695	\$1,223,655	\$8,460,083
Fluor Hanford Total Cost (From Above)							\$102,000	\$0	\$577,926	\$58,650	\$738,576
Project Subtotal							\$2,523,670	\$2,454,062	\$2,938,621	\$1,282,305	\$9,198,659

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Table D-35. (Alternative 4), 216-U-14 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Contingency on Field Costs @	25%										\$2,299,665
TOTAL COST											\$11,498,323

Table D-36. (Alternative 4), 216-U-14 Ditch Representative Site, Periodic Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Item Cost		Notes
	Annually	per 5 Years	
Site Inspection	\$9,632		Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 538,452 ft ² .
Radiation Survey of Surface Soil	\$108,000		Cost is based on \$1,000 for every 5,000 square feet (Site = 538,452 ft ²)
Cover Maintenance	\$61,005		Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Reporting	\$10,000		Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000	Prepare Site Condition Report every 5 years.
TOTALS	\$188,637	\$20,000	

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Table D-37. (Alternative 4), 216-U-14 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$11,498,323		\$11,498,323	1.0000	\$11,498,323
1		\$188,637	\$188,637	0.9690	\$182,789
2		\$188,637	\$188,637	0.9389	\$177,111
3		\$188,637	\$188,637	0.9098	\$171,622
4		\$188,637	\$188,637	0.8816	\$166,303
5		\$208,637	\$208,637	0.8543	\$178,239
6		\$188,637	\$188,637	0.8278	\$156,154
7		\$188,637	\$188,637	0.8021	\$151,306
8		\$188,637	\$188,637	0.7773	\$146,628
9		\$188,637	\$188,637	0.7532	\$142,082
10		\$208,637	\$208,637	0.7298	\$152,263
11		\$188,637	\$188,637	0.7072	\$133,404
12		\$188,637	\$188,637	0.6852	\$129,254
13		\$188,637	\$188,637	0.6640	\$125,255
14		\$188,637	\$188,637	0.6434	\$121,369
15		\$208,637	\$208,637	0.6235	\$130,085
16		\$188,637	\$188,637	0.6041	\$113,956
17		\$188,637	\$188,637	0.5854	\$110,428
18		\$188,637	\$188,637	0.5672	\$106,995
19		\$188,637	\$188,637	0.5496	\$103,675
20		\$208,637	\$208,637	0.5326	\$111,120
21		\$188,637	\$188,637	0.5161	\$97,356
22		\$188,637	\$188,637	0.5001	\$94,337
23		\$188,637	\$188,637	0.4846	\$91,414
24		\$188,637	\$188,637	0.4696	\$88,584
25		\$208,637	\$208,637	0.4550	\$94,930
26		\$188,637	\$188,637	0.4409	\$83,170
27		\$188,637	\$188,637	0.4272	\$80,586
28		\$188,637	\$188,637	0.4140	\$78,096
29		\$188,637	\$188,637	0.4011	\$75,662
30		\$208,637	\$208,637	0.3887	\$81,097
31		\$188,637	\$188,637	0.3766	\$71,041
32		\$188,637	\$188,637	0.3650	\$68,853
33		\$188,637	\$188,637	0.3536	\$66,702
34		\$188,637	\$188,637	0.3427	\$64,646
35		\$208,637	\$208,637	0.3321	\$69,288
36		\$188,637	\$188,637	0.3218	\$60,703
37		\$188,637	\$188,637	0.3118	\$58,817
38		\$188,637	\$188,637	0.3021	\$56,987
39		\$188,637	\$188,637	0.2927	\$55,214
40		\$208,637	\$208,637	0.2837	\$59,190
41		\$188,637	\$188,637	0.2749	\$51,856
42		\$188,637	\$188,637	0.2664	\$50,253
43		\$188,637	\$188,637	0.2581	\$48,687
44		\$188,637	\$188,637	0.2501	\$47,178
45		\$208,637	\$208,637	0.2423	\$50,553
46		\$188,637	\$188,637	0.2348	\$44,292
47		\$188,637	\$188,637	0.2275	\$42,915

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Table D-37. (Alternative 4), 216-U-14 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

48		\$188,637	\$188,637	0.2205	\$41,594
49		\$188,637	\$188,637	0.2136	\$40,293
50		\$208,637	\$208,637	0.2070	\$43,188
51		\$188,637	\$188,637	0.2006	\$37,841
52		\$188,637	\$188,637	0.1944	\$36,671
53		\$188,637	\$188,637	0.1884	\$35,539
54		\$188,637	\$188,637	0.1825	\$34,426
55		\$208,637	\$208,637	0.1769	\$36,908
56		\$188,637	\$188,637	0.1714	\$32,332
57		\$188,637	\$188,637	0.1661	\$31,333
58		\$188,637	\$188,637	0.1609	\$30,352
59		\$188,637	\$188,637	0.1559	\$29,409
60		\$208,637	\$208,637	0.1511	\$31,525
61		\$188,637	\$188,637	0.1464	\$27,616
62		\$188,637	\$188,637	0.1419	\$26,768
63		\$188,637	\$188,637	0.1375	\$25,938
64		\$188,637	\$188,637	0.1332	\$25,126
65		\$208,637	\$208,637	0.1291	\$26,935
66		\$188,637	\$188,637	0.1251	\$23,599
67		\$188,637	\$188,637	0.1212	\$22,863
68		\$188,637	\$188,637	0.1174	\$22,146
69		\$188,637	\$188,637	0.1138	\$21,467
70		\$208,637	\$208,637	0.1103	\$23,013
71		\$188,637	\$188,637	0.1068	\$20,146
72		\$188,637	\$188,637	0.1035	\$19,524
73		\$188,637	\$188,637	0.1003	\$18,920
74		\$188,637	\$188,637	0.0972	\$18,336
75		\$208,637	\$208,637	0.0942	\$19,654
76		\$188,637	\$188,637	0.0913	\$17,223
77		\$188,637	\$188,637	0.0884	\$16,676
78		\$188,637	\$188,637	0.0857	\$16,166
79		\$188,637	\$188,637	0.0830	\$15,657
80		\$208,637	\$208,637	0.0805	\$16,795
81		\$188,637	\$188,637	0.0780	\$14,714
82		\$188,637	\$188,637	0.0756	\$14,261
83		\$188,637	\$188,637	0.0732	\$13,808
84		\$188,637	\$188,637	0.0709	\$13,374
85		\$208,637	\$208,637	0.0687	\$14,333
86		\$188,637	\$188,637	0.0666	\$12,563
87		\$188,637	\$188,637	0.0645	\$12,167
88		\$188,637	\$188,637	0.0625	\$11,790
89		\$188,637	\$188,637	0.0606	\$11,431
90		\$208,637	\$208,637	0.0587	\$12,247
91		\$188,637	\$188,637	0.0569	\$10,733
92		\$188,637	\$188,637	0.0551	\$10,394
93		\$188,637	\$188,637	0.0534	\$10,073
94		\$188,637	\$188,637	0.0518	\$9,771
95		\$208,637	\$208,637	0.0502	\$10,474
96		\$188,637	\$188,637	0.0486	\$9,168

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Table D-37. (Alternative 4), 216-U-14 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

97		\$188,637	\$188,637	0.0471	\$8,885
98		\$188,637	\$188,637	0.0456	\$8,602
99		\$188,637	\$188,637	0.0442	\$8,338
100		\$208,637	\$208,637	0.0429	\$8,951
101		\$188,637	\$188,637	0.0415	\$7,828
102		\$188,637	\$188,637	0.0402	\$7,583
103		\$188,637	\$188,637	0.0390	\$7,357
104		\$188,637	\$188,637	0.0378	\$7,130
105		\$208,637	\$208,637	0.0366	\$7,636
106		\$188,637	\$188,637	0.0355	\$6,697
107		\$188,637	\$188,637	0.0344	\$6,489
108		\$188,637	\$188,637	0.0333	\$6,282
109		\$188,637	\$188,637	0.0323	\$6,093
110		\$208,637	\$208,637	0.0313	\$6,530
111		\$188,637	\$188,637	0.0303	\$5,716
112		\$188,637	\$188,637	0.0294	\$5,546
113		\$188,637	\$188,637	0.0285	\$5,376
114		\$188,637	\$188,637	0.0276	\$5,206
115		\$208,637	\$208,637	0.0267	\$5,571
116		\$188,637	\$188,637	0.0259	\$4,886
117		\$188,637	\$188,637	0.0251	\$4,735
118		\$188,637	\$188,637	0.0243	\$4,584
119		\$188,637	\$188,637	0.0236	\$4,452
120		\$208,637	\$208,637	0.0228	\$4,757
121		\$188,637	\$188,637	0.0221	\$4,169
122		\$188,637	\$188,637	0.0214	\$4,037
123		\$188,637	\$188,637	0.0208	\$3,924
124		\$188,637	\$188,637	0.0201	\$3,792
125		\$208,637	\$208,637	0.0195	\$4,068
126		\$188,637	\$188,637	0.0189	\$3,565
127		\$188,637	\$188,637	0.0183	\$3,452
128		\$188,637	\$188,637	0.0177	\$3,339
129		\$188,637	\$188,637	0.0172	\$3,245
130		\$208,637	\$208,637	0.0167	\$3,484
131		\$188,637	\$188,637	0.0161	\$3,037
132		\$188,637	\$188,637	0.0156	\$2,943
133		\$188,637	\$188,637	0.0152	\$2,867
134		\$188,637	\$188,637	0.0147	\$2,773
135		\$208,637	\$208,637	0.0142	\$2,963
136		\$188,637	\$188,637	0.0138	\$2,603
137		\$188,637	\$188,637	0.0134	\$2,528
138		\$188,637	\$188,637	0.0129	\$2,433
139		\$188,637	\$188,637	0.0125	\$2,358
140		\$208,637	\$208,637	0.0122	\$2,545
141		\$188,637	\$188,637	0.0118	\$2,226
142		\$188,637	\$188,637	0.0114	\$2,150
143		\$188,637	\$188,637	0.0111	\$2,094
144		\$188,637	\$188,637	0.0107	\$2,018
145		\$208,637	\$208,637	0.0104	\$2,170

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Table D-37. (Alternative 4), 216-U-14 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

146		\$188,637	\$188,637	0.0101	\$1,905
147		\$188,637	\$188,637	0.0098	\$1,849
148		\$188,637	\$188,637	0.0094	\$1,773
149		\$188,637	\$188,637	0.0092	\$1,735
150		\$208,637	\$208,637	0.0089	\$1,857
NON-DISCOUNTED COST		\$40,393,896		TOTAL PRESENT WORTH	\$17,457,181

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where $e = 3.2\%$ and $n =$ year (1 - 150).

Table D-38. (Alternative 4), 216-U-14 Ditch Representative Site, Calculation Sheet
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost			Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	

Cover Maintenance (Purchase, Deliver, and Place Topsoil) Annual Cost											
Purchase Pea Gravel (Includes Purchase and Delivery)	399	cy		\$55.67			\$0	\$22,212	\$0	\$0	\$22,212
Silt Loam, Excavate/Load (3,589 cy)	3	day			\$592.00	\$1,190.17	\$0	\$0	\$1,776	\$3,571	\$5,347
Silt Loam Hauling, 5 Trucks, 3 Days/Each	15	day			\$296.00	\$398.55	\$0	\$0	\$4,440	\$5,978	\$10,418
Equipment Mob/Demob	9	ea			\$100.00	\$352.00	\$0	\$0	\$900	\$3,168	\$4,068
Place Silt Loam/Pea Gravel, Front End Loader	3	day			\$296.00	\$630.27	\$0	\$0	\$888	\$1,891	\$2,779
Place Silt Loam/Pea Gravel, Bulldozer with Tiller	3	day			\$296.00	\$951.52	\$0	\$0	\$888	\$2,855	\$3,743
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	5,982	sy		\$0.26	\$1.19	\$0.18	\$0	\$1,555	\$7,119	\$1,077	\$9,751
Oversight	6	days			\$448.00		\$0	\$0	\$2,688	\$0	\$2,688

Total Cost	\$0	\$23,768	\$18,699	\$18,539	\$61,005
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Decontamination Pad Construction											
Decon Pad - Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Decon Pads -Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
Decon Pads - 3" SCH 80 PVC Pipe	5	lf		\$1.63		\$0.00	\$0	\$8	\$0	\$0	\$8
Decon Pads - Sump Pump (2 for 1.4 months)	2.8	mo				\$375.00	\$0	\$0	\$0	\$1,050	\$1,050
Decon Pads - Sump Construction (1)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76

Total Cost	\$0	\$837	\$0	\$1,361	\$2,197
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Note:

- The decontamination pad cost for Alternative 4 is less expensive than the decontamination pad for Alternative 3 because the Alternative 4 decontamination pad usage is expected to be only 1 day, where for Alternative 3 decontamination pad is expected to be used day after day for long periods of time.

Table D-39. (Alternative 4), 216-Z-11 Ditch Representative Site, Capital Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
FLUOR HANFORD COST OVERSIGHT											
Construction Oversight (Includes 1 RCT)	395	days			\$1,720.00		\$0	\$0	\$679,400	\$0	\$679,400
RCT Decontamination Crew (4 RCTs)	1	days			\$1,792.00		\$0	\$0	\$1,792	\$0	\$1,792
SAMPLING CREWS AND SAMPLING											
Air Sampling Crew (Sampler and RCT)	86	days	\$1,000.00		\$896.00	\$500.00	\$86,000	\$0	\$77,056	\$43,000	\$206,056
Fluor Hanford Field Cost							\$86,000	\$0	\$758,248	\$43,000	\$887,248
Fluor Hanford G & A on Labor Cost @	15%						\$0	\$0	\$113,737	\$0	\$113,737
Fluor Hanford G & A on Material Cost @	15%						\$0	\$0	\$0	\$0	\$0
Fluor Hanford G & A on Equipment Cost @	15%						\$0	\$0	\$0	\$6,450	\$6,450
Fluor Hanford Total Cost							\$86,000	\$0	\$871,985	\$49,450	\$1,007,435
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Office Trailer	18.8	mo				\$350.00	\$0	\$0	\$0	\$6,580	\$6,580
Field Office Support	18.8	mo		\$139.00			\$0	\$2,613	\$0	\$0	\$2,613
Storage Trailer	18.8	mo				\$105.00	\$0	\$0	\$0	\$1,974	\$1,974
Equipment Mobilization/Demobilization	14	ea			\$100.00	\$352.00	\$0	\$0	\$1,400	\$4,928	\$6,328
Personnel Mobilization/Demobilization	16	ea			\$592.00		\$0	\$0	\$9,472	\$0	\$9,472
Construction Survey (9 surveys 16.54 acres each)	148.86	ac	\$1,748.00				\$260,207	\$0	\$0	\$0	\$260,207
Site Utilities, Generator and Oiler	18.8	mo			\$6,216.00	\$1,394.80	\$0	\$0	\$116,861	\$26,222	\$143,083
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (see Table D-42)	1	ea		\$836.86		\$1,360.56	\$0	\$837	\$0	\$1,361	\$2,197
DYNAMIC COMPACTION											
Mobilization/Demobilization of Crane (2 cranes)	2	ea			\$5,375.00	\$5,225.00	\$0	\$0	\$10,750	\$10,450	\$21,200
Crane, Compaction with Oiler, (add one day for decon)	61	day			\$1,184.00	\$3,703.20	\$0	\$0	\$72,224	\$225,895	\$298,119
Water Truck	60	day			\$296.00	\$80.00	\$0	\$0	\$17,760	\$4,800	\$22,560

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Table D-39. (Alternative 4), 216-Z-11 Ditch Representative Site, Capital Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
DECONTAMINATION											
Water for Decon Process (1,000 gal/month)	50	gal		\$0.20			\$0	\$10	\$0	\$0	\$10
CAPPING											
Foundation Soil, Excavate/Load (32,697 cy)	26	day			\$592.00	\$1,190.17	\$0	\$0	\$15,392	\$30,944	\$46,336
Foundation Soil, 5 Trucks, 26 Days/Each	130	day			\$296.00	\$398.55	\$0	\$0	\$38,480	\$51,812	\$90,292
Foundation Soil, Front End Loader	26	day			\$592.00	\$630.27	\$0	\$0	\$15,392	\$16,387	\$31,779
Foundation Soil, Bulldozer	26	day			\$592.00	\$656.42	\$0	\$0	\$15,392	\$17,067	\$32,459
Foundation Soil, Grader	26	day			\$296.00	\$656.42	\$0	\$0	\$7,696	\$17,067	\$24,763
Foundation Soil, Vibratory Roller	26	day			\$592.00	\$353.98	\$0	\$0	\$15,392	\$9,204	\$24,596
Asphalt Top Course (4" thick)	64,082	sy	\$10.70				\$685,677	\$0	\$0	\$0	\$685,677
Asphalt Paving (6" thick)	64,082	sy	\$15.40				\$986,863	\$0	\$0	\$0	\$986,863
Purchase Drainage Gravel Cushion	20,585	cy		\$44.47			\$0	\$915,415	\$0	\$0	\$915,415
Drainage Gravel Cushion Layer, Front End Loader	16	day			\$592.00	\$630.27	\$0	\$0	\$9,472	\$10,084	\$19,556
Drainage Gravel Cushion Layer, Bulldozer	16	day			\$592.00	\$656.42	\$0	\$0	\$9,472	\$10,503	\$19,975
Drainage Gravel Cushion Layer, Grader	16	day			\$296.00	\$656.42	\$0	\$0	\$4,736	\$10,503	\$15,239
Drainage Gravel Cushion Layer, Vibratory Roller	16	day			\$592.00	\$353.98	\$0	\$0	\$9,472	\$5,664	\$15,136
Purchase Riprap	217,612	cy		\$45.42			\$0	\$9,883,937	\$0	\$0	\$9,883,937
Riprap, 2 Front End Loaders	136	day			\$592.00	\$1,260.53	\$0	\$0	\$80,512	\$171,433	\$251,945
Riprap, 2 Hydraulic Excavators	136	day			\$592.00	\$1,119.81	\$0	\$0	\$80,512	\$152,294	\$232,806
Purchase Gravel Filter Material	13,299	cy		\$44.47			\$0	\$591,407	\$0	\$0	\$591,407
Gravel Filter Layer, Front End Loader	11	day			\$592.00	\$630.27	\$0	\$0	\$6,512	\$6,933	\$13,445
Gravel Filter Layer, Bulldozer	11	day			\$592.00	\$656.42	\$0	\$0	\$6,512	\$7,221	\$13,733
Gravel Filter Layer, Grader	11	day			\$296.00	\$656.42	\$0	\$0	\$3,256	\$7,221	\$10,477
Gravel Filter Layer, Vibratory Roller	11	day			\$592.00	\$353.98	\$0	\$0	\$6,512	\$3,894	\$10,406
Purchase Sand Layer	6,649	cy		\$41.42			\$0	\$275,402	\$0	\$0	\$275,402
Sand Filter Layer, Front End Loader	6	day			\$592.00	\$630.27	\$0	\$0	\$3,552	\$3,782	\$7,334
Sand Filter Layer, Bulldozer	6	day			\$592.00	\$656.42	\$0	\$0	\$3,552	\$3,939	\$7,491
Sand Filter Layer, Grader	6	day			\$296.00	\$656.42	\$0	\$0	\$1,776	\$3,939	\$5,715
Sand Filter Layer, Vibratory Roller	6	day			\$592.00	\$353.98	\$0	\$0	\$3,552	\$2,124	\$5,676
Compacted Silt Loam, Excavate/Load (33,178 cy)	26	day			\$592.00	\$1,190.17	\$0	\$0	\$15,392	\$30,944	\$46,336
Compacted Silt Loam Haul, 5 Trucks, 26 Days/Each	130	day			\$296.00	\$398.55	\$0	\$0	\$38,480	\$51,812	\$90,292

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Table D-39. (Alternative 4), 216-Z-11 Ditch Representative Site, Capital Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Compacted Silt Loam Layer, Front End Loader	26	day			\$592.00	\$630.27	\$0	\$0	\$15,392	\$16,387	\$31,779
Compacted Silt Loam Layer, Bulldozer	26	day			\$592.00	\$656.42	\$0	\$0	\$15,392	\$17,067	\$32,459
Compacted Silt Loam Layer, Grader	26	day			\$296.00	\$656.42	\$0	\$0	\$7,696	\$17,067	\$24,763
Compacted Silt Loam Layer, Vibratory Roller	26	day			\$592.00	\$353.98	\$0	\$0	\$15,392	\$9,204	\$24,596
Silt Loam, Excavate/Load (35,465 cy)	31	day			\$592.00	\$1,190.17	\$0	\$0	\$18,352	\$36,895	\$55,247
Purchase Pea Gravel Layer	3,941	cy		\$55.67			\$0	\$219,395	\$0	\$0	\$219,395
Silt Loam Hauling, 5 Trucks, 31 Days/Each	155	day			\$296.00	\$398.55	\$0	\$0	\$45,880	\$61,776	\$107,656
Silt Loam/Pea Gravel Layer, Front End Loader	31	day			\$592.00	\$630.27	\$0	\$0	\$18,352	\$19,538	\$37,890
Silt Loam/Pea Gravel Layer, Bulldozer with Tiller	31	day			\$296.00	\$951.52	\$0	\$0	\$9,176	\$29,497	\$38,673
Silt Loam/Pea Gravel Layer, Grader	31	day			\$296.00	\$656.42	\$0	\$0	\$9,176	\$20,349	\$29,525
Install Cap Monitoirng System	1	ea		\$5,000.00			\$0	\$5,000	\$0	\$0	\$5,000
Water Truck	380	day			\$296.00	\$80.00	\$0	\$0	\$112,480	\$30,400	\$142,880
VEGETATION											
Fine Grade & Seed Topsoil	38,278	sy		\$0.26	\$1.19	\$0.18	\$0	\$9,952	\$45,551	\$6,890	\$62,393
MISCELLANEOUS											
Support Personnel	395	day			\$1,896.00		\$0	\$0	\$748,920	\$0	\$748,920
Labor (4 laborers @ \$37/hour)	395	day			\$1,184.00		\$0	\$0	\$467,680	\$0	\$467,680
Post Construction Documents	160	hr			\$50.00		\$0	\$0	\$8,000	\$0	\$8,000
Construction Contractor Field Cost							\$1,932,747	\$11,932,568	\$2,158,374	\$1,174,378	\$17,198,067
Direct Markup on Labor @	25%						\$0	\$0	\$539,593	\$0	\$539,593
Direct Markup on Materials @	10%						\$0	\$1,193,257	\$0	\$0	\$1,193,257
Direct Markup on Subcontracts @	10%						\$193,275	\$0	\$0	\$0	\$193,275
Construction Contractor G&A @	26.5%						\$512,178	\$3,162,130	\$571,969	\$311,210	\$4,557,488
Construction Contractor Subtotal							\$2,638,200	\$16,287,955	\$3,269,936	\$1,485,589	\$23,681,680
Fluor Hanford G&A on Construction Contractor Cost @	15%						\$395,730	\$2,443,193	\$490,490	\$222,838	\$3,552,252
Construction Contractor Total Cost							\$3,033,930	\$18,731,148	\$3,760,426	\$1,708,427	\$27,233,932

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Table D-39. (Alternative 4), 216-Z-11 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Fluor Hanford Total Cost (From Above)						\$86,000	\$0	\$871,985	\$49,450	\$1,007,435	
Project Subtotal						\$3,119,930	\$18,731,148	\$4,632,412	\$1,757,877	\$28,241,367	
Contingency on Field Costs @ 25%										\$7,060,342	
TOTAL COST										\$35,301,709	

Table D-40. (Alternative 4), 216-Z-11 Ditch Representative Site, Periodic Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Item Cost		Notes
	Annually	per 5 Years	
Site Inspection	\$10,752		Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 600,355 ft ² .
Radiation Survey of Surface Soil	\$120,000		Cost is based on \$1,000 for every 5,000 square feet (Site = 600,355 ft ²)
Cover Maintenance	\$74,358		Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Reporting	\$10,000		Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000	Prepare Site Condition Report every 5 years.

TOTALS	\$215,110	\$20,000
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Table D-41. (Alternative 4), 216-Z-11 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State, (4 pages).

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$35,301,709		\$35,301,709	1.0000	\$35,301,709
1		\$215,110	\$215,110	0.9690	\$208,441
2		\$215,110	\$215,110	0.9389	\$201,967
3		\$215,110	\$215,110	0.9098	\$195,707
4		\$215,110	\$215,110	0.8816	\$189,641
5		\$235,110	\$235,110	0.8543	\$200,854
6		\$215,110	\$215,110	0.8278	\$178,068
7		\$215,110	\$215,110	0.8021	\$172,540
8		\$215,110	\$215,110	0.7773	\$167,205
9		\$215,110	\$215,110	0.7532	\$162,021
10		\$235,110	\$235,110	0.7298	\$171,583
11		\$215,110	\$215,110	0.7072	\$152,126
12		\$215,110	\$215,110	0.6852	\$147,393
13		\$215,110	\$215,110	0.6640	\$142,833
14		\$215,110	\$215,110	0.6434	\$138,402
15		\$235,110	\$235,110	0.6235	\$146,591
16		\$215,110	\$215,110	0.6041	\$129,948
17		\$215,110	\$215,110	0.5854	\$125,925
18		\$215,110	\$215,110	0.5672	\$122,010
19		\$215,110	\$215,110	0.5496	\$118,224
20		\$235,110	\$235,110	0.5326	\$125,219
21		\$215,110	\$215,110	0.5161	\$111,018
22		\$215,110	\$215,110	0.5001	\$107,576
23		\$215,110	\$215,110	0.4846	\$104,242
24		\$215,110	\$215,110	0.4696	\$101,016
25		\$235,110	\$235,110	0.4550	\$106,975
26		\$215,110	\$215,110	0.4409	\$94,842
27		\$215,110	\$215,110	0.4272	\$91,895
28		\$215,110	\$215,110	0.4140	\$89,055
29		\$215,110	\$215,110	0.4011	\$86,281
30		\$235,110	\$235,110	0.3887	\$91,387
31		\$215,110	\$215,110	0.3766	\$81,010
32		\$215,110	\$215,110	0.3650	\$78,515
33		\$215,110	\$215,110	0.3536	\$76,063
34		\$215,110	\$215,110	0.3427	\$73,718
35		\$235,110	\$235,110	0.3321	\$78,080
36		\$215,110	\$215,110	0.3218	\$69,222
37		\$215,110	\$215,110	0.3118	\$67,071
38		\$215,110	\$215,110	0.3021	\$64,985
39		\$215,110	\$215,110	0.2927	\$62,963
40		\$235,110	\$235,110	0.2837	\$66,701
41		\$215,110	\$215,110	0.2749	\$59,134
42		\$215,110	\$215,110	0.2664	\$57,305
43		\$215,110	\$215,110	0.2581	\$55,520
44		\$215,110	\$215,110	0.2501	\$53,799
45		\$235,110	\$235,110	0.2423	\$56,967

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Table D-41. (Alternative 4), 216-Z-11 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State, (4 pages).

46		\$215,110	\$215,110	0.2348	\$50,508
47		\$215,110	\$215,110	0.2275	\$48,937
48		\$215,110	\$215,110	0.2205	\$47,432
49		\$215,110	\$215,110	0.2136	\$45,947
50		\$235,110	\$235,110	0.2070	\$48,668
51		\$215,110	\$215,110	0.2006	\$43,151
52		\$215,110	\$215,110	0.1944	\$41,817
53		\$215,110	\$215,110	0.1884	\$40,527
54		\$215,110	\$215,110	0.1825	\$39,258
55		\$235,110	\$235,110	0.1769	\$41,591
56		\$215,110	\$215,110	0.1714	\$36,870
57		\$215,110	\$215,110	0.1661	\$35,730
58		\$215,110	\$215,110	0.1609	\$34,611
59		\$215,110	\$215,110	0.1559	\$33,536
60		\$235,110	\$235,110	0.1511	\$35,525
61		\$215,110	\$215,110	0.1464	\$31,492
62		\$215,110	\$215,110	0.1419	\$30,524
63		\$215,110	\$215,110	0.1375	\$29,578
64		\$215,110	\$215,110	0.1332	\$28,653
65		\$235,110	\$235,110	0.1291	\$30,353
66		\$215,110	\$215,110	0.1251	\$26,910
67		\$215,110	\$215,110	0.1212	\$26,071
68		\$215,110	\$215,110	0.1174	\$25,254
69		\$215,110	\$215,110	0.1138	\$24,479
70		\$235,110	\$235,110	0.1103	\$25,933
71		\$215,110	\$215,110	0.1068	\$22,974
72		\$215,110	\$215,110	0.1035	\$22,264
73		\$215,110	\$215,110	0.1003	\$21,576
74		\$215,110	\$215,110	0.0972	\$20,909
75		\$235,110	\$235,110	0.0942	\$22,147
76		\$215,110	\$215,110	0.0913	\$19,640
77		\$215,110	\$215,110	0.0884	\$19,016
78		\$215,110	\$215,110	0.0857	\$18,435
79		\$215,110	\$215,110	0.0830	\$17,854
80		\$235,110	\$235,110	0.0805	\$18,926
81		\$215,110	\$215,110	0.0780	\$16,779
82		\$215,110	\$215,110	0.0756	\$16,262
83		\$215,110	\$215,110	0.0732	\$15,746
84		\$215,110	\$215,110	0.0709	\$15,251
85		\$235,110	\$235,110	0.0687	\$16,152
86		\$215,110	\$215,110	0.0666	\$14,326
87		\$215,110	\$215,110	0.0645	\$13,875
88		\$215,110	\$215,110	0.0625	\$13,444
89		\$215,110	\$215,110	0.0606	\$13,036
90		\$235,110	\$235,110	0.0587	\$13,801
91		\$215,110	\$215,110	0.0569	\$12,240
92		\$215,110	\$215,110	0.0551	\$11,853

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Table D-41. (Alternative 4), 216-Z-11 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State, (4 pages).

93		\$215,110	\$215,110	0.0534	\$11,487
94		\$215,110	\$215,110	0.0518	\$11,143
95		\$235,110	\$235,110	0.0502	\$11,803
96		\$215,110	\$215,110	0.0486	\$10,454
97		\$215,110	\$215,110	0.0471	\$10,132
98		\$215,110	\$215,110	0.0456	\$9,809
99		\$215,110	\$215,110	0.0442	\$9,508
100		\$235,110	\$235,110	0.0429	\$10,086
101		\$215,110	\$215,110	0.0415	\$8,927
102		\$215,110	\$215,110	0.0402	\$8,647
103		\$215,110	\$215,110	0.0390	\$8,389
104		\$215,110	\$215,110	0.0378	\$8,131
105		\$235,110	\$235,110	0.0366	\$8,605
106		\$215,110	\$215,110	0.0355	\$7,636
107		\$215,110	\$215,110	0.0344	\$7,400
108		\$215,110	\$215,110	0.0333	\$7,163
109		\$215,110	\$215,110	0.0323	\$6,948
110		\$235,110	\$235,110	0.0313	\$7,359
111		\$215,110	\$215,110	0.0303	\$6,518
112		\$215,110	\$215,110	0.0294	\$6,324
113		\$215,110	\$215,110	0.0285	\$6,131
114		\$215,110	\$215,110	0.0276	\$5,937
115		\$235,110	\$235,110	0.0267	\$6,277
116		\$215,110	\$215,110	0.0259	\$5,571
117		\$215,110	\$215,110	0.0251	\$5,399
118		\$215,110	\$215,110	0.0243	\$5,227
119		\$215,110	\$215,110	0.0236	\$5,077
120		\$235,110	\$235,110	0.0228	\$5,361
121		\$215,110	\$215,110	0.0221	\$4,754
122		\$215,110	\$215,110	0.0214	\$4,603
123		\$215,110	\$215,110	0.0208	\$4,474
124		\$215,110	\$215,110	0.0201	\$4,324
125		\$235,110	\$235,110	0.0195	\$4,585
126		\$215,110	\$215,110	0.0189	\$4,066
127		\$215,110	\$215,110	0.0183	\$3,937
128		\$215,110	\$215,110	0.0177	\$3,807
129		\$215,110	\$215,110	0.0172	\$3,700
130		\$235,110	\$235,110	0.0167	\$3,926
131		\$215,110	\$215,110	0.0161	\$3,463
132		\$215,110	\$215,110	0.0156	\$3,356
133		\$215,110	\$215,110	0.0152	\$3,270
134		\$215,110	\$215,110	0.0147	\$3,162
135		\$235,110	\$235,110	0.0142	\$3,339
136		\$215,110	\$215,110	0.0138	\$2,969
137		\$215,110	\$215,110	0.0134	\$2,882
138		\$215,110	\$215,110	0.0129	\$2,775
139		\$215,110	\$215,110	0.0125	\$2,689

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Table D-41. (Alternative 4), 216-Z-11 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State, (4 pages).

140		\$235,110	\$235,110	0.0122	\$2,868
141		\$215,110	\$215,110	0.0118	\$2,538
142		\$215,110	\$215,110	0.0114	\$2,452
143		\$215,110	\$215,110	0.0111	\$2,388
144		\$215,110	\$215,110	0.0107	\$2,302
145		\$235,110	\$235,110	0.0104	\$2,445
146		\$215,110	\$215,110	0.0101	\$2,173
147		\$215,110	\$215,110	0.0098	\$2,108
148		\$215,110	\$215,110	0.0094	\$2,022
149		\$215,110	\$215,110	0.0092	\$1,979
150		\$235,110	\$235,110	0.0089	\$2,092
NON-DISCOUNTED COST		\$68,168,173		TOTAL PRESENT WORTH	\$42,080,500

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where $e = 3.2\%$ and $n =$ year (1 - 150).

Table D-42. (Alternative 4), 216-Z-11 Ditch Representative Site, Calculation Sheet
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Cover Maintenance (Purchase, Deliver, and Place Topsoil) Annual Cost											
Purchase Pea Gravel (Includes Purchase and Delivery)	445	cy		\$55.67			\$0	\$24,773	\$0	\$0	\$24,773
Silt Loam, Excavate/Load (4,002 cy)	4.0	day			\$592.00	\$1,190.17	\$0	\$0	\$2,368	\$4,761	\$7,129
Silt Loam Hauling, 5 Trucks, 4 Day/Each	20	day			\$296.00	\$398.55	\$0	\$0	\$5,920	\$7,971	\$13,891
Equipment Mob/Demob	9	ea			\$100.00	\$352.00	\$0	\$0	\$900	\$3,168	\$4,068
Place Silt Loam/Pea Gravel, Front End Loader	4	day			\$296.00	\$630.27	\$0	\$0	\$1,184	\$2,521	\$3,705
Place Silt Loam/Pea Gravel, Bulldozer with Tiller	4	day			\$296.00	\$951.52	\$0	\$0	\$1,184	\$3,806	\$4,990
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	6,671	sy		\$0.26	\$1.19	\$0.18	\$0	\$1,734	\$7,938	\$1,201	\$10,874
Oversight	11	days			\$448.00		\$0	\$0	\$4,928	\$0	\$4,928

Total Cost	\$0	\$26,508	\$24,422	\$23,428	\$74,358
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Decontamination Pad Construction											
Decon Pad - Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Decon Pads -Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
Decon Pads - 3" SCH 80 PVC Pipe	5	lf		\$1.63		\$0.00	\$0	\$8	\$0	\$0	\$8
Decon Pads - Sump Pump (2 for 1.4 months)	2.8	mo				\$375.00	\$0	\$0	\$0	\$1,050	\$1,050
Decon Pads - Sump Construction (1)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76

Total Cost	\$0	\$837	\$0	\$1,361	\$2,197
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Note:

- The decontamination pad cost for Alternative 4 is less expensive than the decontamination pad for Alternative 3 because the Alternative 4 decontamination pad usage is expected to be only 1 day, where for Alternative 3 decontamination pad is expected to be used day after day for long periods of time.

Table D-43. (Alternative 4), 216-A-25 Gable Mountain Pond Representative Site, Capital Cost
 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
FLUOR HANFORD COST											
OVERSIGHT											
Construction Oversight (Includes 1 RCT)	730	days			\$1,720.00		\$0	\$0	\$1,255,600	\$0	\$1,255,600
RCT Decontamination Crew (4 RCTs)	1	days			\$1,792.00		\$0	\$0	\$1,792	\$0	\$1,792
SAMPLING CREWS AND SAMPLING											
Air Sampling Crew (Sampler and RCT)	301	days	\$1,000.00		\$896.00	\$500.00	\$301,000	\$0	\$269,696	\$150,500	\$721,196
Fluor Hanford Field Cost							\$301,000	\$0	\$1,527,088	\$150,500	\$1,978,588
Fluor Hanford G & A on Labor Cost @	15%						\$0	\$0	\$229,063	\$0	\$229,063
Fluor Hanford G & A on Material Cost @	15%						\$0	\$0	\$0	\$0	\$0
Fluor Hanford G & A on Equipment Cost @	15%						\$0	\$0	\$0	\$22,575	\$22,575
Fluor Hanford Total Cost							\$301,000	\$0	\$1,756,151	\$173,075	\$2,230,226
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Office Trailer	34.8	mo				\$350.00	\$0	\$0	\$0	\$12,180	\$12,180
Field Office Support	34.8	mo		\$139.00			\$0	\$4,837	\$0	\$0	\$4,837
Storage Trailer	34.8	mo					\$0	\$0	\$0	\$3,654	\$3,654
Equipment Mobilization/Demobilization	24	ea			\$100.00	\$352.00	\$0	\$0	\$2,400	\$8,448	\$10,848
Personnel Mobilization/Demobilization	26	ea			\$592.00		\$0	\$0	\$15,392	\$0	\$15,392
Construction Survey (8 surveys, 84.57 acres each)	676.56	ac	\$1,748.00				\$1,182,627	\$0	\$0	\$0	\$1,182,627
Site Utilities, Generator and Oiler	34.8	mo			\$6,216.00	\$1,394.80	\$0	\$0	\$216,317	\$48,539	\$264,856
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (see Table D-46)	1	ea		\$836.86		\$1,360.56	\$0	\$837	\$0	\$1,361	\$2,197
DYNAMIC COMPACTION											
Mobilization/Demobilization of Crane (4 cranes)	4	ea			\$5,375.00	\$5,225.00	\$0	\$0	\$21,500	\$20,900	\$42,400
Crane, Compaction with Oiler, (add one day for decon)	155	day			\$2,368.00	\$7,406.40	\$0	\$0	\$367,040	\$1,147,992	\$1,515,032
Water Truck	154	day			\$296.00	\$80.00	\$0	\$0	\$45,584	\$12,320	\$57,904
DECONTAMINATION											
Water for Decon Process (1,000 gal/month)	50	gal		\$0.20			\$0	\$10	\$0	\$0	\$10

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Table D-43. (Alternative 4), 216-A-25 Gable Mountain Pond Representative Site, Capital Cost
200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
CAPPING											
Grading Fill, Excavate/Load (375,168 cy)	147	days			\$1,184.00	\$2,380.34	\$0	\$0	\$174,048	\$349,910	\$523,958
Grading Fill, Hauling, 10 Trucks, 147 Days/Each	1,470	days			\$296.00	\$398.55	\$0	\$0	\$435,120	\$585,872	\$1,020,992
Grading Fill, Front End Loader	147	days			\$592.00	\$1,260.53	\$0	\$0	\$87,024	\$185,298	\$272,322
Grading Fill, Bulldozer	147	days			\$592.00	\$1,312.83	\$0	\$0	\$87,024	\$192,987	\$280,011
Grading Fill, Grader	147	days			\$296.00	\$656.42	\$0	\$0	\$43,512	\$96,493	\$140,005
Grading Fill, Vibratory Roller	147	days			\$592.00	\$707.96	\$0	\$0	\$87,024	\$104,070	\$191,094
Asphalt Base-course (4" thick)	334,196	sy	\$10.70				\$3,575,897	\$0	\$0	\$0	\$3,575,897
Asphalt Paving (6" thick)	334,196	sy	\$15.40				\$5,146,618	\$0	\$0	\$0	\$5,146,618
Purchase Lateral Drainage Layer	55,326	cy		\$44.47			\$0	\$2,460,347	\$0	\$0	\$2,460,347
Lateral Drainage Layer, Front End Loader	22	days			\$592.00	\$1,260.53	\$0	\$0	\$13,024	\$27,732	\$40,756
Lateral Drainage Layer, Bulldozer	22	days			\$592.00	\$1,312.83	\$0	\$0	\$13,024	\$28,882	\$41,906
Lateral Drainage Layer, Grader	22	days			\$296.00	\$656.42	\$0	\$0	\$6,512	\$14,441	\$20,953
Lateral Drainage Layer, Vibratory Roller	22	days			\$592.00	\$707.96	\$0	\$0	\$13,024	\$15,575	\$28,599
Purchase Gravel Filter Layer	55,154	cy		\$45.67			\$0	\$2,518,883	\$0	\$0	\$2,518,883
Gravel Filter Layer, Front End Loader	22	days			\$592.00	\$1,260.53	\$0	\$0	\$13,024	\$27,732	\$40,756
Gravel Filter Layer, Bulldozer	22	days			\$592.00	\$1,312.83	\$0	\$0	\$13,024	\$28,882	\$41,906
Gravel Filter Layer, Grader	22	days			\$296.00	\$656.42	\$0	\$0	\$6,512	\$14,441	\$20,953
Gravel Filter Layer, Vibratory Roller	22	days			\$592.00	\$707.96	\$0	\$0	\$13,024	\$15,575	\$28,599
Purchase Sand Layer	53,890	cy		\$41.42			\$0	\$2,232,124	\$0	\$0	\$2,232,124
Sand Filter Layer, Front End Loader	21	days			\$592.00	\$1,260.53	\$0	\$0	\$12,432	\$26,471	\$38,903
Sand Filter Layer, Bulldozer	21	days			\$592.00	\$1,312.83	\$0	\$0	\$12,432	\$27,570	\$40,002
Sand Filter Layer, Grader	21	days			\$296.00	\$656.42	\$0	\$0	\$6,216	\$13,785	\$20,001
Sand Filter Layer, Vibratory Roller	21	days			\$592.00	\$707.96	\$0	\$0	\$12,432	\$14,867	\$27,299
Geotextile (Non-woven)	323,341	sy		\$1.10		\$0.06	\$0	\$355,675	\$0	\$19,400	\$375,076
Cap Berm, Excavate/Load (10,029 cy)	8	day			\$1,184.00	\$2,380.34	\$0	\$0	\$9,472	\$19,043	\$28,515
Cap Berm, Hauling, 10 Trucks, 8 Days/Each	80	day			\$296.00	\$398.55	\$0	\$0	\$23,680	\$31,884	\$55,564
Cap Berm, Front End Loader	8	day			\$592.00	\$1,260.53	\$0	\$0	\$4,736	\$10,084	\$14,820
Cap Berm, Bulldozer	8	day			\$592.00	\$1,312.83	\$0	\$0	\$4,736	\$10,503	\$15,239
Cap Berm, Vibratory Roller	8	day			\$592.00	\$707.96	\$0	\$0	\$4,736	\$5,664	\$10,400
Compacted Silt Loam, Excavate/Load (176,351 cy)	69	days			\$1,184.00	\$2,380.34	\$0	\$0	\$81,696	\$164,244	\$245,940
Compacted Silt Loam Hauling, 10 Trucks, 69 Days/Ea	690	days			\$296.00	\$398.55	\$0	\$0	\$204,240	\$275,001	\$479,241
Compacted Silt Loam Layer, Front End Loader	69	days			\$592.00	\$1,260.53	\$0	\$0	\$40,848	\$86,977	\$127,825
Compacted Silt Loam Layer, Bulldozer	69	days			\$592.00	\$1,312.83	\$0	\$0	\$40,848	\$90,586	\$131,434

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Table D-43. (Alternative 4), 216-A-25 Gable Mountain Pond Representative Site, Capital Cost
 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Compacted Silt Loam Layer, Grader	69	days			\$296.00	\$656.42	\$0	\$0	\$20,424	\$45,293	\$65,717
Compacted Silt Loam Layer, Vibratory Roller	69	days			\$592.00	\$707.96	\$0	\$0	\$40,848	\$48,849	\$89,697
Silt Loam, Excavate/Load (160,471 cy)	70	days			\$1,184.00	\$2,380.34	\$0	\$0	\$82,880	\$166,624	\$249,504
Purchase Pea Gravel Layer	17824	cy		\$55.67			\$0	\$992,262	\$0	\$0	\$992,262
Silt Loam Hauling, 10 Trucks, 70 Day/Each	700	days			\$296.00	\$398.55	\$0	\$0	\$207,200	\$278,987	\$486,187
Silt Loam/Pea Gravel Layer, Front End Loader	70	days			\$592.00	\$1,260.53	\$0	\$0	\$41,440	\$88,237	\$129,677
Silt Loam/Pea Gravel Layer, Bulldozer with Tiller	70	days			\$592.00	\$1,903.04	\$0	\$0	\$41,440	\$133,213	\$174,653
Silt Loam/Pea Gravel Layer, Grader	70	days			\$296.00	\$656.42	\$0	\$0	\$20,720	\$45,949	\$66,669
Purchase Riprap	6,921	cy		\$45.42			\$0	\$314,352	\$0	\$0	\$314,352
Riprap, Front End Loader	9	days			\$592.00	\$1,260.53	\$0	\$0	\$5,328	\$11,345	\$16,673
Riprap, Hydraulic Excavator	9	days			\$592.00	\$1,119.81	\$0	\$0	\$5,328	\$10,078	\$15,406
Install Cap Monitoring System	1	ea		\$5,000.00			\$0	\$5,000	\$0	\$0	\$5,000
Water Truck	715	day			\$296.00	\$80.00	\$0	\$0	\$211,640	\$57,200	\$268,840
VEGETATION											
Fine Grade & Seed Topsoil	322,538	sy		\$0.26	\$1.19	\$0.18	\$0	\$83,860	\$383,820	\$58,057	\$525,737
MISCELLANEOUS											
Support Personnel	730	day			\$1,896.00		\$0	\$0	\$1,384,080	\$0	\$1,384,080
Labor (4 laborers @ \$37/hour)	730	day			\$1,184.00		\$0	\$0	\$864,320	\$0	\$864,320
Post Construction Documents	160	hr			\$50.00		\$0	\$0	\$8,000	\$0	\$8,000
Construction Contractor Field Cost							\$9,905,142	\$8,996,787	\$5,450,577	\$4,685,528	\$29,038,034
Direct Markup on Labor @	25%						\$0	\$0	\$1,362,644	\$0	\$1,362,644
Direct Markup on Materials @	10%						\$0	\$899,679	\$0	\$0	\$899,679
Direct Markup on Subcontracts @	10%						\$990,514	\$0	\$0	\$0	\$990,514
Construction Contractor G&A @	26.5%						\$2,624,863	\$2,384,149	\$1,444,403	\$1,241,665	\$7,695,079
Construction Contractor Subtotal							\$13,520,519	\$12,280,614	\$8,257,624	\$5,927,192	\$39,985,950
Fluor Hanford G&A on Construction Contractor Cost @	15%						\$2,028,078	\$1,842,092	\$1,238,644	\$889,079	\$5,997,893
Construction Contractor Total Cost							\$15,548,597	\$14,122,707	\$9,496,268	\$6,816,271	\$45,983,843

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Table D-43. (Alternative 4), 216-A-25 Gable Mountain Pond Representative Site, Capital Cost
 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Fluor Hanford Total Cost (From Above)						\$301,000	\$0	\$1,756,151	\$173,075	\$2,230,226	
Project Subtotal						\$15,849,597	\$14,122,707	\$11,252,419	\$6,989,346	\$48,214,069	
Contingency on Field Costs @ 25%										\$12,053,517	
TOTAL COST										\$60,267,587	

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Table D-44. (Alternative 4), 216-A-25 Gable Mountain Pond Representative Site, Periodic Cost 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State.

Item	Item Cost		Notes
	Annually	per 5 Years	
Site Inspection	\$55,104		Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 3,069,965 ft ² .
Radiation Survey of Surface Soil	\$614,000		Cost is based on \$1,000 for every 5,000 square feet (Site = 3,069,965 ft ²)
Cover Maintenance	\$335,659		Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Reporting	\$10,000		Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000	Prepare Site Condition Report every 5 years.

TOTALS	\$1,014,763	\$20,000
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Table D-45. (Alternative 4), 216-A-25 Gable Mountain Pond Representative Site, Present Worth Analysis 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$60,267,587		\$60,267,587	1.0000	\$60,267,587
1		\$1,014,763	\$1,014,763	0.9690	\$983,306
2		\$1,014,763	\$1,014,763	0.9389	\$952,761
3		\$1,014,763	\$1,014,763	0.9098	\$923,232
4		\$1,014,763	\$1,014,763	0.8816	\$894,615
5		\$1,034,763	\$1,034,763	0.8543	\$883,998
6		\$1,014,763	\$1,014,763	0.8278	\$840,021
7		\$1,014,763	\$1,014,763	0.8021	\$813,942
8		\$1,014,763	\$1,014,763	0.7773	\$788,776
9		\$1,014,763	\$1,014,763	0.7532	\$764,320
10		\$1,034,763	\$1,034,763	0.7298	\$755,170
11		\$1,014,763	\$1,014,763	0.7072	\$717,641
12		\$1,014,763	\$1,014,763	0.6852	\$695,316
13		\$1,014,763	\$1,014,763	0.6640	\$673,803
14		\$1,014,763	\$1,014,763	0.6434	\$652,899
15		\$1,034,763	\$1,034,763	0.6235	\$645,175
16		\$1,014,763	\$1,014,763	0.6041	\$613,019
17		\$1,014,763	\$1,014,763	0.5854	\$594,043
18		\$1,014,763	\$1,014,763	0.5672	\$575,574
19		\$1,014,763	\$1,014,763	0.5496	\$557,714
20		\$1,034,763	\$1,034,763	0.5326	\$551,115
21		\$1,014,763	\$1,014,763	0.5161	\$523,719
22		\$1,014,763	\$1,014,763	0.5001	\$507,483
23		\$1,014,763	\$1,014,763	0.4846	\$491,754
24		\$1,014,763	\$1,014,763	0.4696	\$476,533
25		\$1,034,763	\$1,034,763	0.4550	\$470,817
26		\$1,014,763	\$1,014,763	0.4409	\$447,409
27		\$1,014,763	\$1,014,763	0.4272	\$433,507
28		\$1,014,763	\$1,014,763	0.4140	\$420,112
29		\$1,014,763	\$1,014,763	0.4011	\$407,022
30		\$1,034,763	\$1,034,763	0.3887	\$402,213
31		\$1,014,763	\$1,014,763	0.3766	\$382,160
32		\$1,014,763	\$1,014,763	0.3650	\$370,389
33		\$1,014,763	\$1,014,763	0.3536	\$358,820
34		\$1,014,763	\$1,014,763	0.3427	\$347,759
35		\$1,034,763	\$1,034,763	0.3321	\$343,645
36		\$1,014,763	\$1,014,763	0.3218	\$326,551
37		\$1,014,763	\$1,014,763	0.3118	\$316,403
38		\$1,014,763	\$1,014,763	0.3021	\$306,560
39		\$1,014,763	\$1,014,763	0.2927	\$297,021
40		\$1,034,763	\$1,034,763	0.2837	\$293,562
41		\$1,014,763	\$1,014,763	0.2749	\$278,958
42		\$1,014,763	\$1,014,763	0.2664	\$270,333
43		\$1,014,763	\$1,014,763	0.2581	\$261,910
44		\$1,014,763	\$1,014,763	0.2501	\$253,792
45		\$1,034,763	\$1,034,763	0.2423	\$250,723

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Table D-45. (Alternative 4), 216-A-25 Gable Mountain Pond Representative Site, Present Worth Analysis 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

46		\$1,014,763	\$1,014,763	0.2348	\$238,266
47		\$1,014,763	\$1,014,763	0.2275	\$230,859
48		\$1,014,763	\$1,014,763	0.2205	\$223,755
49		\$1,014,763	\$1,014,763	0.2136	\$216,753
50		\$1,034,763	\$1,034,763	0.2070	\$214,196
51		\$1,014,763	\$1,014,763	0.2006	\$203,562
52		\$1,014,763	\$1,014,763	0.1944	\$197,270
53		\$1,014,763	\$1,014,763	0.1884	\$191,181
54		\$1,014,763	\$1,014,763	0.1825	\$185,194
55		\$1,034,763	\$1,034,763	0.1769	\$183,050
56		\$1,014,763	\$1,014,763	0.1714	\$173,930
57		\$1,014,763	\$1,014,763	0.1661	\$168,552
58		\$1,014,763	\$1,014,763	0.1609	\$163,275
59		\$1,014,763	\$1,014,763	0.1559	\$158,202
60		\$1,034,763	\$1,034,763	0.1511	\$156,353
61		\$1,014,763	\$1,014,763	0.1464	\$148,561
62		\$1,014,763	\$1,014,763	0.1419	\$143,995
63		\$1,014,763	\$1,014,763	0.1375	\$139,530
64		\$1,014,763	\$1,014,763	0.1332	\$135,166
65		\$1,034,763	\$1,034,763	0.1291	\$133,588
66		\$1,014,763	\$1,014,763	0.1251	\$126,947
67		\$1,014,763	\$1,014,763	0.1212	\$122,989
68		\$1,014,763	\$1,014,763	0.1174	\$119,133
69		\$1,014,763	\$1,014,763	0.1138	\$115,480
70		\$1,034,763	\$1,034,763	0.1103	\$114,134
71		\$1,014,763	\$1,014,763	0.1068	\$108,377
72		\$1,014,763	\$1,014,763	0.1035	\$105,028
73		\$1,014,763	\$1,014,763	0.1003	\$101,781
74		\$1,014,763	\$1,014,763	0.0972	\$98,635
75		\$1,034,763	\$1,034,763	0.0942	\$97,475
76		\$1,014,763	\$1,014,763	0.0913	\$92,648
77		\$1,014,763	\$1,014,763	0.0884	\$89,705
78		\$1,014,763	\$1,014,763	0.0857	\$86,965
79		\$1,014,763	\$1,014,763	0.0830	\$84,225
80		\$1,034,763	\$1,034,763	0.0805	\$83,298
81		\$1,014,763	\$1,014,763	0.0780	\$79,152
82		\$1,014,763	\$1,014,763	0.0756	\$76,716
83		\$1,014,763	\$1,014,763	0.0732	\$74,281
84		\$1,014,763	\$1,014,763	0.0709	\$71,947
85		\$1,034,763	\$1,034,763	0.0687	\$71,088
86		\$1,014,763	\$1,014,763	0.0666	\$67,583
87		\$1,014,763	\$1,014,763	0.0645	\$65,452
88		\$1,014,763	\$1,014,763	0.0625	\$63,423
89		\$1,014,763	\$1,014,763	0.0606	\$61,495
90		\$1,034,763	\$1,034,763	0.0587	\$60,741
91		\$1,014,763	\$1,014,763	0.0569	\$57,740
92		\$1,014,763	\$1,014,763	0.0551	\$55,913

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Table D-45. (Alternative 4), 216-A-25 Gable Mountain Pond Representative Site, Present Worth Analysis 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

93		\$1,014,763	\$1,014,763	0.0534	\$54,188
94		\$1,014,763	\$1,014,763	0.0518	\$52,565
95		\$1,034,763	\$1,034,763	0.0502	\$51,945
96		\$1,014,763	\$1,014,763	0.0486	\$49,318
97		\$1,014,763	\$1,014,763	0.0471	\$47,795
98		\$1,014,763	\$1,014,763	0.0456	\$46,273
99		\$1,014,763	\$1,014,763	0.0442	\$44,853
100		\$1,034,763	\$1,034,763	0.0429	\$44,391
101		\$1,014,763	\$1,014,763	0.0415	\$42,113
102		\$1,014,763	\$1,014,763	0.0402	\$40,793
103		\$1,014,763	\$1,014,763	0.0390	\$39,576
104		\$1,014,763	\$1,014,763	0.0378	\$38,358
105		\$1,034,763	\$1,034,763	0.0366	\$37,872
106		\$1,014,763	\$1,014,763	0.0355	\$36,024
107		\$1,014,763	\$1,014,763	0.0344	\$34,908
108		\$1,014,763	\$1,014,763	0.0333	\$33,792
109		\$1,014,763	\$1,014,763	0.0323	\$32,777
110		\$1,034,763	\$1,034,763	0.0313	\$32,388
111		\$1,014,763	\$1,014,763	0.0303	\$30,747
112		\$1,014,763	\$1,014,763	0.0294	\$29,834
113		\$1,014,763	\$1,014,763	0.0285	\$28,921
114		\$1,014,763	\$1,014,763	0.0276	\$28,007
115		\$1,034,763	\$1,034,763	0.0267	\$27,628
116		\$1,014,763	\$1,014,763	0.0259	\$26,282
117		\$1,014,763	\$1,014,763	0.0251	\$25,471
118		\$1,014,763	\$1,014,763	0.0243	\$24,659
119		\$1,014,763	\$1,014,763	0.0236	\$23,948
120		\$1,034,763	\$1,034,763	0.0228	\$23,593
121		\$1,014,763	\$1,014,763	0.0221	\$22,426
122		\$1,014,763	\$1,014,763	0.0214	\$21,716
123		\$1,014,763	\$1,014,763	0.0208	\$21,107
124		\$1,014,763	\$1,014,763	0.0201	\$20,397
125		\$1,034,763	\$1,034,763	0.0195	\$20,178
126		\$1,014,763	\$1,014,763	0.0189	\$19,179
127		\$1,014,763	\$1,014,763	0.0183	\$18,570
128		\$1,014,763	\$1,014,763	0.0177	\$17,961
129		\$1,014,763	\$1,014,763	0.0172	\$17,454
130		\$1,034,763	\$1,034,763	0.0167	\$17,281
131		\$1,014,763	\$1,014,763	0.0161	\$16,338
132		\$1,014,763	\$1,014,763	0.0156	\$15,830
133		\$1,014,763	\$1,014,763	0.0152	\$15,424
134		\$1,014,763	\$1,014,763	0.0147	\$14,917
135		\$1,034,763	\$1,034,763	0.0142	\$14,694
136		\$1,014,763	\$1,014,763	0.0138	\$14,004
137		\$1,014,763	\$1,014,763	0.0134	\$13,598
138		\$1,014,763	\$1,014,763	0.0129	\$13,090
139		\$1,014,763	\$1,014,763	0.0125	\$12,685

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Table D-45. (Alternative 4), 216-A-25 Gable Mountain Pond Representative Site, Present Worth Analysis 200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State. (4 Pages)

140		\$1,034,763	\$1,034,763	0.0122	\$12,624
141		\$1,014,763	\$1,014,763	0.0118	\$11,974
142		\$1,014,763	\$1,014,763	0.0114	\$11,568
143		\$1,014,763	\$1,014,763	0.0111	\$11,264
144		\$1,014,763	\$1,014,763	0.0107	\$10,858
145		\$1,034,763	\$1,034,763	0.0104	\$10,762
146		\$1,014,763	\$1,014,763	0.0101	\$10,249
147		\$1,014,763	\$1,014,763	0.0098	\$9,945
148		\$1,014,763	\$1,014,763	0.0094	\$9,539
149		\$1,014,763	\$1,014,763	0.0092	\$9,336
150		\$1,034,763	\$1,034,763	0.0089	\$9,209
NON-DISCOUNTED COST		\$213,082,107		TOTAL PRESENT WORTH	\$91,813,972

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where $e = 3.2\%$ and $n =$ year (1 - 150).

Table D-46. (Alternative 4), 216-A-25 Gable Mountain Pond Representative Site, Calculation Sheet
200-CW-1 Gable Mountain Pond/B Pond and Ditches Waste Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Cover Maintenance (Purchase, Deliver, and Place Topsoil) Annual Cost											
Purchase Pea Gravel (Includes Purchase and Delivery)	2,274	cy		\$55.67			\$0	\$126,594	\$0	\$0	\$126,594
Silt Loam, Excavate/Load (20,466 cy)	18	day			\$592.00	\$1,190.17	\$0	\$0	\$10,656	\$21,423	\$32,079
Silt Loam Hauling, 5 Trucks, 18 Day/Each	90	day			\$296.00	\$398.55	\$0	\$0	\$26,640	\$35,870	\$62,510
Equipment Mob/Demob	9	ea			\$100.00	\$352.00	\$0	\$0	\$900	\$3,168	\$4,068
Place Silt Loam/Pea Gravel, Front End Loader	18	day			\$296.00	\$630.27	\$0	\$0	\$5,328	\$11,345	\$16,673
Place Silt Loam/Pea Gravel, Bulldozer with Tiller	18	day			\$296.00	\$951.52	\$0	\$0	\$5,328	\$17,127	\$22,455
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	34,111	sy		\$0.26	\$1.19	\$0.18	\$0	\$8,869	\$40,592	\$6,140	\$55,601
Oversight	35	days			\$448.00		\$0	\$0	\$15,680	\$0	\$15,680

Total Cost	\$0	\$135,462	\$105,124	\$95,073	\$335,659
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Decontamination Pad Construction											
Decon Pad - Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Decon Pads -Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
Decon Pads - 3" SCH 80 PVC Pipe	5	lf		\$1.63		\$0.00	\$0	\$8	\$0	\$0	\$8
Decon Pads - Sump Pump (2 for 1.4 months)	2.8	mo				\$375.00	\$0	\$0	\$0	\$1,050	\$1,050
Decon Pads - Sump Construction (1)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76

Total Cost	\$0	\$837	\$0	\$1,361	\$2,197
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Note:

- The decontamination pad cost for Alternative 4 is less expensive than the decontamination pad for Alternative 3 because the Alternative 4 decontamination pad usage is expected to be only 1 day, where for Alternative 3 decontamination pad is expected to be used day after day for long periods of time.

Table D-47. (Alternative 4) 216-T-26 Crib representative Site, Capital Cost
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
FLUOR HANFORD COST											
OVERSIGHT											
Construction Oversight (Includes 1 RCT)	38	days			\$1,720.00		\$0	\$0	\$65,360	\$0	\$65,360
RCT Decontamination Crew (4 RCTs)	1	days			\$1,792.00		\$0	\$0	\$1,792	\$0	\$1,792
SAMPLING CREWS AND SAMPLING											
Air Sampling Crew (Sampler and RCT)	5	days	\$1,000.00		\$896.00	\$500.00	\$5,000	\$0	\$4,480	\$2,500	\$11,980
Fluor Hanford Field Cost							\$5,000	\$0	\$71,632	\$2,500	\$79,132
Fluor Hanford G & A on Labor Cost @	15%						\$0	\$0	\$10,745	\$0	\$10,745
Fluor Hanford G & A on Material Cost @	15%						\$0	\$0	\$0	\$0	\$0
Fluor Hanford G & A on Equipment Cost @	15%						\$0	\$0	\$0	\$375	\$375
Fluor Hanford Total Cost							\$5,000	\$0	\$82,377	\$2,875	\$90,252
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Office Trailer	1.8	mo				\$350.00	\$0	\$0	\$0	\$630	\$630
Field Office Support	1.8	mo		\$139.00			\$0	\$250	\$0	\$0	\$250
Storage Trailer	1.8	mo				\$105.00	\$0	\$0	\$0	\$189	\$189
Equipment Mobilization/Demobilization	14	ea			\$100.00	\$352.00	\$0	\$0	\$1,400	\$4,928	\$6,328
Personnel Mobilization/Demobilization	16	ea			\$592.00		\$0	\$0	\$9,472	\$0	\$9,472
Construction Survey (8 surveys, 0.39 acres each)	3.12	ac	\$1,748.00				\$5,454	\$0	\$0	\$0	\$5,454
Site Utilities, Generator and Oiler	1.8	mo			\$6,216.00	\$1,394.80	\$0	\$0	\$11,189	\$2,511	\$13,699
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (see Table D-50)	1	ea		\$836.86	\$0.00	\$1,360.56	\$0	\$837	\$0	\$1,361	\$2,197
DYNAMIC COMPACTION											
Mobilization/Demobilization of Crane	1	ea			\$5,375.00	\$5,225.00	\$0	\$0	\$5,375	\$5,225	\$10,600
Crane, Compaction with Oiler, (add one day for decon)	4	day			\$592.00	\$1,851.60	\$0	\$0	\$2,368	\$7,406	\$9,774
Water Truck	3	day			\$296.00	\$80.00	\$0	\$0	\$888	\$240	\$1,128
DECONTAMINATION											
Water for Decon Process (1,000 gal/month)	50	gal		\$0.20			\$0	\$10	\$0	\$0	\$10
CAPPING											
Grading Fill, Excavate/Load (1,573 cy)	2	days			\$592.00	\$1,190.17	\$0	\$0	\$1,184	\$2,380	\$3,564
Grading Fill, Hauling, 5 Trucks, 2 Days/Each	10	days			\$296.00	\$398.55	\$0	\$0	\$2,960	\$3,986	\$6,946

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Table D-47. (Alternative 4) 216-T-26 Crib representative Site, Capital Cost
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Grading Fill, Front End Loader	2	days			\$296.00	\$630.27	\$0	\$0	\$592	\$1,261	\$1,853
Grading Fill, Bulldozer	2	days			\$296.00	\$656.42	\$0	\$0	\$592	\$1,313	\$1,905
Grading Fill, Grader	2	days			\$296.00	\$656.42	\$0	\$0	\$592	\$1,313	\$1,905
Grading Fill, Vibratory Roller	2	days			\$296.00	\$353.98	\$0	\$0	\$592	\$708	\$1,300
Asphalt Base-course (4" thick)	1,248	sy	\$10.70				\$13,354	\$0	\$0	\$0	\$13,354
Asphalt Paving (6" thick)	1,248	sy	\$15.40				\$19,219	\$0	\$0	\$0	\$19,219
Purchase Lateral Drainage Layer	191	cy		\$44.47			\$0	\$8,494	\$0	\$0	\$8,494
Lateral Drainage Layer, Front End Loader	1	days			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Lateral Drainage Layer, Bulldozer	1	days			\$296.00	\$656.42	\$0	\$0	\$296	\$656	\$952
Lateral Drainage Layer, Grader	1	days			\$296.00	\$656.42	\$0	\$0	\$296	\$656	\$952
Lateral Drainage Layer, Vibratory Roller	1	days			\$296.00	\$353.98	\$0	\$0	\$296	\$354	\$650
Purchase Gravel Filter Layer	184	cy		\$45.67			\$0	\$8,403	\$0	\$0	\$8,403
Gravel Filter Layer, Front End Loader	1	days			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Gravel Filter Layer, Bulldozer	1	days			\$296.00	\$656.42	\$0	\$0	\$296	\$656	\$952
Gravel Filter Layer, Grader	1	days			\$296.00	\$656.42	\$0	\$0	\$296	\$656	\$952
Gravel Filter Layer, Vibratory Roller	1	days			\$296.00	\$353.98	\$0	\$0	\$296	\$354	\$650
Purchase Sand Layer	133	cy		\$41.42			\$0	\$5,509	\$0	\$0	\$5,509
Sand Filter Layer, Front End Loader	1	days			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Sand Filter Layer, Bulldozer	1	days			\$296.00	\$656.42	\$0	\$0	\$296	\$656	\$952
Sand Filter Layer, Grader	1	days			\$296.00	\$656.42	\$0	\$0	\$296	\$656	\$952
Sand Filter Layer, Vibratory Roller	1	days			\$296.00	\$353.98	\$0	\$0	\$296	\$354	\$650
Geotextile (Non-woven)	798	sy		\$1.10		\$0.06	\$0	\$878	\$0	\$48	\$926
Cap Berm, Excavate/Load (363 cy)	1	day			\$1,184.00	\$2,380.34	\$0	\$0	\$1,184	\$2,380	\$3,564
Cap Berm, Hauling, 5 Trucks, 1 Days/Each	5	day			\$296.00	\$398.55	\$0	\$0	\$1,480	\$1,993	\$3,473
Cap Berm, Front End Loader	1	day			\$592.00	\$1,260.53	\$0	\$0	\$592	\$1,261	\$1,853
Cap Berm, Bulldozer	1	day			\$592.00	\$1,312.83	\$0	\$0	\$592	\$1,313	\$1,905
Cap Berm, Vibratory Roller	1	day			\$592.00	\$707.96	\$0	\$0	\$592	\$708	\$1,300
Compacted Silt Loam, Excavate/Load (333 cy)	1	days			\$592.00	\$1,190.17	\$0	\$0	\$592	\$1,190	\$1,782
Compacted Silt Loam Hauling, 5 Trucks, 1 Days/Ea	5	days			\$296.00	\$398.55	\$0	\$0	\$1,480	\$1,993	\$3,473
Compacted Silt Loam Layer, Front End Loader	1	days			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Compacted Silt Loam Layer, Bulldozer	1	days			\$296.00	\$656.42	\$0	\$0	\$296	\$656	\$952
Compacted Silt Loam Layer, Grader	1	days			\$296.00	\$656.42	\$0	\$0	\$296	\$656	\$952
Compacted Silt Loam Layer, Vibratory Roller	1	days			\$296.00	\$353.98	\$0	\$0	\$296	\$354	\$650
Silt Loam, Excavate/Load (356 cy)	1	days			\$592.00	\$1,190.17	\$0	\$0	\$592	\$1,190	\$1,782
Purchase Pea Gravel Layer	40	cy		\$55.67			\$0	\$2,227	\$0	\$0	\$2,227
Silt Loam Hauling, 5 Trucks, 1 Day/Each	5	days			\$296.00	\$398.55	\$0	\$0	\$1,480	\$1,993	\$3,473
Silt Loam/Pea Gravel Layer, Front End Loader	1	days			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926

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Table D-47. (Alternative 4) 216-T-26 Crib representative Site, Capital Cost
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Silt Loam/Pea Gravel Layer, Bulldozer with Tiller	1	days			\$296.00	\$951.52	\$0	\$0	\$296	\$952	\$1,248
Silt Loam/Pea Gravel Layer, Grader	1	days			\$296.00	\$656.42	\$0	\$0	\$296	\$656	\$952
Purchase Riprap	302	cy		\$45.42			\$0	\$13,717	\$0	\$0	\$13,717
Riprap, Front End Loader	1	days			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Riprap, Hydraulic Excavator	1	days			\$296.00	\$559.90	\$0	\$0	\$296	\$560	\$856
Install Cap Monitoring System	1	ea		\$5,000.00			\$0	\$5,000	\$0	\$0	\$5,000
Water Truck	23	days			\$296.00	\$80.00	\$0	\$0	\$6,808	\$1,840	\$8,648
VEGETATION											
Fine Grade & Seed Topsoil	771	sy		\$0.26	\$1.19	\$0.18	\$0	\$200	\$917	\$139	\$1,257
MISCELLANEOUS											
Support Personnel	38	day			\$1,896.00		\$0	\$0	\$72,048	\$0	\$72,048
Labor (4 laborers @ \$37/hour)	38	day			\$1,184.00		\$0	\$0	\$44,992	\$0	\$44,992
Post Construction Documents	160	hr			\$50.00		\$0	\$0	\$8,000	\$0	\$8,000
Construction Contractor Field Cost							\$38,027	\$74,125	\$186,221	\$64,445	\$362,818
Direct Markup on Labor @	25%					\$0	\$0	\$46,555	\$0	\$46,555	
Direct Markup on Materials @	10%					\$0	\$7,412	\$0	\$0	\$7,412	
Direct Markup on Subcontracts @	10%					\$3,803	\$0	\$0	\$0	\$3,803	
Construction Contractor G&A @	26.5%					\$10,077	\$19,643	\$49,349	\$17,078	\$96,147	
Construction Contractor Subtotal							\$51,906	\$101,180	\$282,125	\$81,523	\$516,735
Fluor Hanford G&A on Construction Contractor Cost @	15%					\$7,786	\$15,177	\$42,319	\$12,228	\$77,510	
Construction Contractor Total Cost							\$59,692	\$116,358	\$324,444	\$93,752	\$594,246
Fluor Hanford Total Cost (From Above)							\$5,000	\$0	\$82,377	\$2,875	\$90,252
Project Subtotal							\$64,692	\$116,358	\$406,821	\$96,627	\$684,497
Contingency on Field Costs @	25%									\$171,124	
TOTAL COST											\$855,622

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Table D-48. (Alternative 4) 216-T-26 Crib representative Site,
 Periodic Cost 200-TW-1 Scavenged Tank Waste Group,
 Hanford Site, Washington State.

Item	Item Cost		Notes
	Annually	per 5 Years	
Site Inspection	\$448		Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 14,240 ft ² .
Radiation Survey of Surface Soil	\$3,000		Cost is based on \$1,000 for every 5,000 square feet (Site = 14,240 ft ²)
Cover Maintenance	\$9,371		Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Reporting	\$10,000		Obtain lab. prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000	Prepare Site Condition Report every 5 years.
TOTALS	\$22,819	\$20,000	

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Table D-49. (Alternative 4) 216-T-26 Crib representative Site,
Present Worth Analysis 200-TW-1 Scavenged Tank Waste Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$855,622		\$855,622	1.0000	\$855,622
1		\$22,819	\$22,819	0.9690	\$22,112
2		\$22,819	\$22,819	0.9389	\$21,425
3		\$22,819	\$22,819	0.9098	\$20,761
4		\$22,819	\$22,819	0.8816	\$20,117
5		\$42,819	\$42,819	0.8543	\$36,580
6		\$22,819	\$22,819	0.8278	\$18,890
7		\$22,819	\$22,819	0.8021	\$18,303
8		\$22,819	\$22,819	0.7773	\$17,737
9		\$22,819	\$22,819	0.7532	\$17,187
10		\$42,819	\$42,819	0.7298	\$31,249
11		\$22,819	\$22,819	0.7072	\$16,138
12		\$22,819	\$22,819	0.6852	\$15,636
13		\$22,819	\$22,819	0.6640	\$15,152
14		\$22,819	\$22,819	0.6434	\$14,682
15		\$42,819	\$42,819	0.6235	\$26,698
16		\$22,819	\$22,819	0.6041	\$13,785
17		\$22,819	\$22,819	0.5854	\$13,358
18		\$22,819	\$22,819	0.5672	\$12,943
19		\$22,819	\$22,819	0.5496	\$12,541
20		\$42,819	\$42,819	0.5326	\$22,805
21		\$22,819	\$22,819	0.5161	\$11,777
22		\$22,819	\$22,819	0.5001	\$11,412
23		\$22,819	\$22,819	0.4846	\$11,058
24		\$22,819	\$22,819	0.4696	\$10,716
25		\$42,819	\$42,819	0.4550	\$19,483
26		\$22,819	\$22,819	0.4409	\$10,061
27		\$22,819	\$22,819	0.4272	\$9,748
28		\$22,819	\$22,819	0.4140	\$9,447
29		\$22,819	\$22,819	0.4011	\$9,153
30		\$42,819	\$42,819	0.3887	\$16,644
31		\$22,819	\$22,819	0.3766	\$8,594
32		\$22,819	\$22,819	0.3650	\$8,329
33		\$22,819	\$22,819	0.3536	\$8,069
34		\$22,819	\$22,819	0.3427	\$7,820
35		\$42,819	\$42,819	0.3321	\$14,220
36		\$22,819	\$22,819	0.3218	\$7,343
37		\$22,819	\$22,819	0.3118	\$7,115
38		\$22,819	\$22,819	0.3021	\$6,894
39		\$22,819	\$22,819	0.2927	\$6,679
40		\$42,819	\$42,819	0.2837	\$12,148
41		\$22,819	\$22,819	0.2749	\$6,273
42		\$22,819	\$22,819	0.2664	\$6,079
43		\$22,819	\$22,819	0.2581	\$5,890
44		\$22,819	\$22,819	0.2501	\$5,707
45		\$42,819	\$42,819	0.2423	\$10,375

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Table D-49. (Alternative 4) 216-T-26 Crib representative Site,
 Present Worth Analysis 200-TW-1 Scavenged Tank Waste Group,
 Hanford Site, Washington State. (4 Pages)

46		\$22,819	\$22,819	0.2348	\$5,358
47		\$22,819	\$22,819	0.2275	\$5,191
48		\$22,819	\$22,819	0.2205	\$5,032
49		\$22,819	\$22,819	0.2136	\$4,874
50		\$42,819	\$42,819	0.2070	\$8,864
51		\$22,819	\$22,819	0.2006	\$4,577
52		\$22,819	\$22,819	0.1944	\$4,436
53		\$22,819	\$22,819	0.1884	\$4,299
54		\$22,819	\$22,819	0.1825	\$4,164
55		\$42,819	\$42,819	0.1769	\$7,575
56		\$22,819	\$22,819	0.1714	\$3,911
57		\$22,819	\$22,819	0.1661	\$3,790
58		\$22,819	\$22,819	0.1609	\$3,672
59		\$22,819	\$22,819	0.1559	\$3,557
60		\$42,819	\$42,819	0.1511	\$6,470
61		\$22,819	\$22,819	0.1464	\$3,341
62		\$22,819	\$22,819	0.1419	\$3,238
63		\$22,819	\$22,819	0.1375	\$3,138
64		\$22,819	\$22,819	0.1332	\$3,039
65		\$42,819	\$42,819	0.1291	\$5,528
66		\$22,819	\$22,819	0.1251	\$2,855
67		\$22,819	\$22,819	0.1212	\$2,766
68		\$22,819	\$22,819	0.1174	\$2,679
69		\$22,819	\$22,819	0.1138	\$2,597
70		\$42,819	\$42,819	0.1103	\$4,723
71		\$22,819	\$22,819	0.1068	\$2,437
72		\$22,819	\$22,819	0.1035	\$2,362
73		\$22,819	\$22,819	0.1003	\$2,289
74		\$22,819	\$22,819	0.0972	\$2,218
75		\$42,819	\$42,819	0.0942	\$4,034
76		\$22,819	\$22,819	0.0913	\$2,083
77		\$22,819	\$22,819	0.0884	\$2,017
78		\$22,819	\$22,819	0.0857	\$1,956
79		\$22,819	\$22,819	0.0830	\$1,894
80		\$42,819	\$42,819	0.0805	\$3,447
81		\$22,819	\$22,819	0.0780	\$1,780
82		\$22,819	\$22,819	0.0756	\$1,725
83		\$22,819	\$22,819	0.0732	\$1,670
84		\$22,819	\$22,819	0.0709	\$1,618
85		\$42,819	\$42,819	0.0687	\$2,942
86		\$22,819	\$22,819	0.0666	\$1,520
87		\$22,819	\$22,819	0.0645	\$1,472
88		\$22,819	\$22,819	0.0625	\$1,426
89		\$22,819	\$22,819	0.0606	\$1,383
90		\$42,819	\$42,819	0.0587	\$2,513
91		\$22,819	\$22,819	0.0569	\$1,298
92		\$22,819	\$22,819	0.0551	\$1,257

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Table D-49. (Alternative 4) 216-T-26 Crib representative Site,
 Present Worth Analysis 200-TW-1 Scavenged Tank Waste Group,
 Hanford Site, Washington State. (4 Pages)

93		\$22,819	\$22,819	0.0534	\$1,219
94		\$22,819	\$22,819	0.0518	\$1,182
95		\$42,819	\$42,819	0.0502	\$2,150
96		\$22,819	\$22,819	0.0486	\$1,109
97		\$22,819	\$22,819	0.0471	\$1,075
98		\$22,819	\$22,819	0.0456	\$1,041
99		\$22,819	\$22,819	0.0442	\$1,009
100		\$42,819	\$42,819	0.0429	\$1,837
101		\$22,819	\$22,819	0.0415	\$947
102		\$22,819	\$22,819	0.0402	\$917
103		\$22,819	\$22,819	0.0390	\$890
104		\$22,819	\$22,819	0.0378	\$863
105		\$42,819	\$42,819	0.0366	\$1,567
106		\$22,819	\$22,819	0.0355	\$810
107		\$22,819	\$22,819	0.0344	\$785
108		\$22,819	\$22,819	0.0333	\$760
109		\$22,819	\$22,819	0.0323	\$737
110		\$42,819	\$42,819	0.0313	\$1,340
111		\$22,819	\$22,819	0.0303	\$691
112		\$22,819	\$22,819	0.0294	\$671
113		\$22,819	\$22,819	0.0285	\$650
114		\$22,819	\$22,819	0.0276	\$630
115		\$42,819	\$42,819	0.0267	\$1,143
116		\$22,819	\$22,819	0.0259	\$591
117		\$22,819	\$22,819	0.0251	\$573
118		\$22,819	\$22,819	0.0243	\$555
119		\$22,819	\$22,819	0.0236	\$539
120		\$42,819	\$42,819	0.0228	\$976
121		\$22,819	\$22,819	0.0221	\$504
122		\$22,819	\$22,819	0.0214	\$488
123		\$22,819	\$22,819	0.0208	\$475
124		\$22,819	\$22,819	0.0201	\$459
125		\$42,819	\$42,819	0.0195	\$835
126		\$22,819	\$22,819	0.0189	\$431
127		\$22,819	\$22,819	0.0183	\$418
128		\$22,819	\$22,819	0.0177	\$404
129		\$22,819	\$22,819	0.0172	\$392
130		\$42,819	\$42,819	0.0167	\$715
131		\$22,819	\$22,819	0.0161	\$367
132		\$22,819	\$22,819	0.0156	\$356
133		\$22,819	\$22,819	0.0152	\$347
134		\$22,819	\$22,819	0.0147	\$335
135		\$42,819	\$42,819	0.0142	\$608
136		\$22,819	\$22,819	0.0138	\$315
137		\$22,819	\$22,819	0.0134	\$306
138		\$22,819	\$22,819	0.0129	\$294
139		\$22,819	\$22,819	0.0125	\$285

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Table D-49. (Alternative 4) 216-T-26 Crib representative Site,
Present Worth Analysis 200-TW-1 Scavenged Tank Waste Group,
Hanford Site, Washington State. (4 Pages)

140		\$42,819	\$42,819	0.0122	\$522
141		\$22,819	\$22,819	0.0118	\$269
142		\$22,819	\$22,819	0.0114	\$260
143		\$22,819	\$22,819	0.0111	\$253
144		\$22,819	\$22,819	0.0107	\$244
145		\$42,819	\$42,819	0.0104	\$445
146		\$22,819	\$22,819	0.0101	\$230
147		\$22,819	\$22,819	0.0098	\$224
148		\$22,819	\$22,819	0.0094	\$214
149		\$22,819	\$22,819	0.0092	\$210
150		\$42,819	\$42,819	0.0089	\$381
NON-DISCOUNTED COST		\$4,878,468		TOTAL PRESENT WORTH	\$1,678,609

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where $e = 3.2\%$ and $n =$ year (1 - 150).

Table D-50. (Alternative 4) 216-T-26 Crib representative Site, Calculation Sheet
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Cover Maintenance (Purchase, Deliver, and Place Topsoil) Annual Cost											
Purchase Pea Gravel (Includes Purchase and Delivery)	11	cy		\$55.67			\$0	\$612	\$0	\$0	\$612
Silt Loam, Excavate/Load (94 cy)	1	day			\$592.00	\$1,190.17	\$0	\$0	\$592	\$1,190	\$1,782
Silt Loam Hauling, 2 Trucks, 1 Day/Each	2	day			\$296.00	\$398.55	\$0	\$0	\$592	\$797	\$1,389
Equipment Mob/Demob	5	ea			\$100.00	\$352.00	\$0	\$0	\$500	\$1,760	\$2,260
Place Silt Loam/Pea Gravel, Front End Loader	1	day			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Place Silt Loam/Pea Gravel, Bulldozer with Tiller	1	day			\$296.00	\$951.52	\$0	\$0	\$296	\$952	\$1,248
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	158	sy		\$0.26	\$1.19	\$0.18	\$0	\$41	\$188	\$28	\$258
Oversight	2	days			\$448.00		\$0	\$0	\$896	\$0	\$896
Total Cost							\$0	\$653	\$3,360	\$5,358	\$9,371

Decontamination Pad Construction											
Decon Pad - Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Decon Pads -Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
Decon Pads - 3" SCH 80 PVC Pipe	5	lf		\$1.63		\$0.00	\$0	\$8	\$0	\$0	\$8
Decon Pads - Sump Pump (2 for 1.4 months)	2.8	mo				\$375.00	\$0	\$0	\$0	\$1,050	\$1,050
Decon Pads - Sump Construction (1)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76
Total Cost							\$0	\$837	\$0	\$1,361	\$2,197

Note:

1. The decontamination pad cost for Alternative 4 is less expensive than the decontamination pad for Alternative 3 because the Alternative 4 decontamination pad usage is expected to be only 1 day, where for Alternative 3 decontamination pad is expected to be used day after day for long periods of time.

Table D-51. (Alternative 5), 216-U-10 Pond Representative Site,
 Capital Cost 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
FLUOR HANFORD COST											
OVERSIGHT											
Construction Oversight (Includes 1 RCT)	1,059	days			\$1,720.00		\$0	\$0	\$1,821,480	\$0	\$1,821,480
RCT Decontamination Crew (4 RCTs)	572	days			\$1,792.00		\$0	\$0	\$1,025,024	\$0	\$1,025,024
RCT on Excavator (1/excavator, 2 excavators)	638	days			\$896.00		\$0	\$0	\$571,648	\$0	\$571,648
SAMPLING CREWS AND SAMPLING											
Overburden Samples (6 Per Site)	6	ea	\$1,100.00				\$6,600	\$0	\$0	\$0	\$6,600
LLW Samples (1 per 845 lcy Contaminated Soil, or 6 Min)	856	ea	\$5,000.00				\$4,280,000	\$0	\$0	\$0	\$4,280,000
QC Samples (5% of Total Samples or 1 minimum)	44	ea	\$5,000.00				\$220,000	\$0	\$0	\$0	\$220,000
Air Sampling and Crew (Sampler and RCT)	895	days	\$1,000.00		\$896.00	\$500.00	\$895,000	\$0	\$801,920	\$447,500	\$2,144,420
Soil/Sediment Sampling Crew (Sampler 50% and RCT)	638	days			\$672.00		\$0	\$0	\$428,736	\$0	\$428,736
TRANSPORTATION AND DISPOSAL											
Transportation and Disposal of Rolloff Boxes to ERDF	57,185	ea	\$1,100.00				\$62,903,500	\$0	\$0	\$0	\$62,903,500
Fluor Hanford Field Cost							\$68,305,100	\$0	\$4,648,808	\$447,500	\$73,401,408
Fluor Hanford G & A on Labor Cost @ 15%							\$0	\$0	\$697,321	\$0	\$697,321
Fluor Hanford G & A on Material Cost @ 15%							\$0	\$0	\$0	\$0	\$0
Fluor Hanford G & A on Equipment Cost @ 15%							\$0	\$0	\$0	\$67,125	\$67,125
Fluor Hanford Total Cost							\$68,305,100	\$0	\$5,346,129	\$514,625	\$74,165,854
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Office Trailer	50.4	mo				\$350.00	\$0	\$0	\$0	\$17,640	\$17,640
Field Office Support	50.4	mo		\$139.00			\$0	\$7,006	\$0	\$0	\$7,006
Storage Trailer	50.4	mo				\$105.00	\$0	\$0	\$0	\$5,292	\$5,292
Equipment Mobilization/Demobilization	24	ea			\$100.00	\$352.00	\$0	\$0	\$2,400	\$8,448	\$10,848
Personnel Mobilization/Demobilization	26	ea			\$592.00		\$0	\$0	\$15,392	\$0	\$15,392

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Table D-51. (Alternative 5), 216-U-10 Pond Representative Site,
Capital Cost 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Construction Survey (2 surveys 38.9 acres each)	77.8	ac	\$1,748.00				\$135,994	\$0	\$0	\$0	\$135,994
Site Utilities, Generator and Oiler	50.4	mo			\$6,216.00	\$1,394.80	\$0	\$0	\$313,286	\$70,298	\$383,584
Install Temporary Fence (Blaze Orange)	5,702	lf		\$1.63	\$1.16		\$0	\$9,294	\$6,614	\$0	\$15,909
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (See Table D-54)	2	ea		\$6,682.86	\$5,920.00	\$310.56	\$0	\$13,366	\$11,840	\$621	\$25,827
DECONTAMINATION											
Decontamination Crew (4 Laborers)	572	day			\$1,184.00		\$0	\$0	\$677,248	\$0	\$677,248
Water for Decon Process (1,000 gal/month)	27,238	gal		\$0.20			\$0	\$5,448	\$0	\$0	\$5,448
EXCAVATION											
Water Truck	638	day			\$592.00	\$80.00	\$0	\$0	\$377,696	\$51,040	\$428,736
Hydraulic Excavator (2 for 638 days)	1,276	day			\$592.00	\$1,119.81	\$0	\$0	\$755,392	\$1,428,877	\$2,184,269
Front End Loader (overburden)	66	day			\$592.00	\$1,260.53	\$0	\$0	\$39,072	\$83,195	\$122,267
DYNAMIC COMPACTION											
Mobilization/Demobilization of Crane (4 cranes)	4	ea			\$5,375.00	\$5,225.00	\$0	\$0	\$21,500	\$20,900	\$42,400
Crane, Compaction with Oiler	70	day			\$2,368.00	\$7,406.40	\$0	\$0	\$165,760	\$518,448	\$684,208
Water Truck	69	day			\$296.00	\$80.00	\$0	\$0	\$20,424	\$5,520	\$25,944
SITE RESTORATION											
Overburden, Loader (2 for 43 days) (125,912 cy)	86	day			\$592.00	\$1,260.53	\$0	\$0	\$50,912	\$108,406	\$159,318
Overburden, Bulldozers (2 for 43 days) (125,912 cy)	86	day			\$592.00	\$1,312.83	\$0	\$0	\$50,912	\$112,904	\$163,816
Fill Material, Excavate/Load (370,825 cy)	145	day			\$1,184.00	\$2,380.34	\$0	\$0	\$171,680	\$345,150	\$516,830
Fill Material Hauling, 10 Trucks, 145 Days/Ea	1,450	day			\$296.00	\$398.55	\$0	\$0	\$429,200	\$577,901	\$1,007,101
Fill Material, Front End Loader (no compaction)	145	day			\$592.00	\$1,260.53	\$0	\$0	\$85,840	\$182,777	\$268,617
Fill Material, Bulldozer (no compaction)	145	day			\$592.00	\$1,312.83	\$0	\$0	\$85,840	\$190,361	\$276,201
Fill Material, Excavate/Load (85,428 cy)	34	day			\$1,184.00	\$2,380.34	\$0	\$0	\$40,256	\$80,932	\$121,188
Fill Material Hauling, 10 Trucks, 34 Days/Ea	340	day			\$296.00	\$398.55	\$0	\$0	\$100,640	\$135,508	\$236,148
Fill Material, Front End Loader (compaction)	34	day			\$592.00	\$1,260.53	\$0	\$0	\$20,128	\$42,858	\$62,986
Fill Material, Bulldozer (compaction)	34	day			\$592.00	\$1,312.83	\$0	\$0	\$20,128	\$44,636	\$64,764
Fill Material, Vibratory Roller	34	day			\$296.00	\$353.98	\$0	\$0	\$10,064	\$12,035	\$22,099

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Table D-51. (Alternative 5), 216-U-10 Pond Representative Site,
 Capital Cost 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost			Extended Cost				Subtotal	
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor		Equip-ment
Compacted Silt Loam, Excavate/Load (86,024 cy)	34	day			\$1,184.00	\$2,380.34	\$0	\$0	\$40,256	\$80,932	\$121,188
Compacted Silt Loam Hauling, 10 Trucks, 34 Days/Ea	340	day			\$296.00	\$398.55	\$0	\$0	\$100,640	\$135,508	\$236,148
Compacted Silt Loam Layer, Front End Loader	34	day			\$592.00	\$1,260.53	\$0	\$0	\$20,128	\$42,858	\$62,986
Compacted Silt Loam Layer, Bulldozer	34	day			\$592.00	\$1,312.83	\$0	\$0	\$20,128	\$44,636	\$64,764
Compacted Silt Loam Layer, Vibratory Roller	34	day			\$296.00	\$353.98	\$0	\$0	\$10,064	\$12,035	\$22,099
Silt Loam, Excavate/Load (78,079 cy)	34	day			\$1,184.00	\$2,380.34	\$0	\$0	\$40,256	\$80,932	\$121,188
Purchase Pea Gravel Layer	8,675	cy		\$55.67			\$0	\$482,937	\$0	\$0	\$482,937
Silt Loam Hauling, 10 Trucks, 34 Day/Each	340	day			\$296.00	\$398.55	\$0	\$0	\$100,640	\$135,508	\$236,148
Silt Loam/Pea Gravel Layer, Front End Loader	34	day			\$592.00	\$1,260.53	\$0	\$0	\$20,128	\$42,858	\$62,986
Silt Loam/Pea Gravel Layer, Bulldozer with Tiller	34	day			\$592.00	\$1,903.04	\$0	\$0	\$20,128	\$64,703	\$84,831
Revegetation (Fine Grade & Seed Topsoil)	188,179	sy		\$0.26	\$1.19	\$0.18	\$0	\$48,927	\$223,933	\$33,872	\$306,732
Water Truck	406	day			\$296.00	\$80.00	\$0	\$0	\$120,176	\$32,480	\$152,656
MISCELLANEOUS											
Support Personnel	1,059	day			\$1,896.00		\$0	\$0	\$2,007,864	\$0	\$2,007,864
Post Construction Documents	160	hr			\$50.00		\$0	\$0	\$8,000	\$0	\$8,000
Construction Contractor Field Cost							\$135,994	\$595,577	\$6,206,018	\$4,752,402	\$11,689,991
Direct Markup on Labor @ 25%							\$0	\$0	\$1,551,504	\$0	\$1,551,504
Direct Markup on Materials @ 10%							\$0	\$59,558	\$0	\$0	\$59,558
Direct Markup on Subcontracts @ 10%							\$13,599	\$0	\$0	\$0	\$13,599
Construction Contractor G&A @ 26.5%							\$36,039	\$157,828	\$1,644,595	\$1,259,386	\$3,097,848
Construction Contractor Subtotal							\$185,632	\$812,963	\$9,402,117	\$6,011,788	\$16,412,500
Fluor Hanford G&A on Construction Contractor Cost @ 15%							\$27,845	\$121,944	\$1,410,318	\$901,768	\$2,461,875
Construction Contractor Total Cost							\$213,477	\$934,907	\$10,812,434	\$6,913,556	\$18,874,375

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Table D-51. (Alternative 5), 216-U-10 Pond Representative Site,
 Capital Cost 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub- contract	Material	Labor	Equip- ment	Sub- contract	Material	Labor	Equip- ment	
Fluor Hanford Total Cost (From Above)						\$68,305,100	\$0	\$5,346,129	\$514,625	\$74,165,854	
Project Subtotal						\$68,518,577	\$934,907	\$16,158,564	\$7,428,181	\$93,040,229	
Contingency on Field Costs @ 25%										\$23,260,057	
TOTAL COST										\$116,300,286	

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Table D-52. (Alternative 5), 216-U-10 Pond Representative Site,
 Periodic Cost 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State.

Item	Item Cost		Notes
	Annually	per 5 Years	
Site Inspection	\$25,312		Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 1,411,344 ft ² .
Radiation Survey of Surface Soil	\$282,000		Cost is based on \$1,000 for every 5,000 square feet (Site = 1,411,344sf)
Cover Maintenance	\$136,838		Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Reporting	\$10,000		Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000	Prepare Site Condition Report every 5 years.
TOTALS	\$454,150	\$20,000	

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Table D-53. (Alternative 5), 216-U-10 Pond Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (5 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$116,300,286		\$116,300,286	1.0000	\$116,300,286
1		\$454,150	\$454,150	0.9690	\$440,071
2		\$454,150	\$454,150	0.9389	\$426,401
3		\$454,150	\$454,150	0.9098	\$413,185
4		\$454,150	\$454,150	0.8816	\$400,378
5		\$474,150	\$474,150	0.8543	\$405,066
6		\$454,150	\$454,150	0.8278	\$375,945
7		\$454,150	\$454,150	0.8021	\$364,273
8		\$454,150	\$454,150	0.7773	\$353,011
9		\$454,150	\$454,150	0.7532	\$342,066
10		\$474,150	\$474,150	0.7298	\$346,034
11		\$454,150	\$454,150	0.7072	\$321,175
12		\$454,150	\$454,150	0.6852	\$311,183
13		\$454,150	\$454,150	0.6640	\$301,555
14		\$454,150	\$454,150	0.6434	\$292,200
15		\$474,150	\$474,150	0.6235	\$295,632
16		\$454,150	\$454,150	0.6041	\$274,352
17		\$454,150	\$454,150	0.5854	\$265,859
18		\$454,150	\$454,150	0.5672	\$257,594
19		\$454,150	\$454,150	0.5496	\$249,601
20		\$474,150	\$474,150	0.5326	\$252,532
21		\$454,150	\$454,150	0.5161	\$234,387
22		\$454,150	\$454,150	0.5001	\$227,120
23		\$454,150	\$454,150	0.4846	\$220,081
24		\$454,150	\$454,150	0.4696	\$213,269
25		\$474,150	\$474,150	0.4550	\$215,738
26		\$454,150	\$454,150	0.4409	\$200,235
27		\$454,150	\$454,150	0.4272	\$194,013
28		\$454,150	\$454,150	0.4140	\$188,018
29		\$454,150	\$454,150	0.4011	\$182,159

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Table D-53. (Alternative 5), 216-U-10 Pond Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (5 Pages)

30		\$474,150	\$474,150	0.3887	\$184,302
31		\$454,150	\$454,150	0.3766	\$171,033
32		\$454,150	\$454,150	0.3650	\$165,765
33		\$454,150	\$454,150	0.3536	\$160,587
34		\$454,150	\$454,150	0.3427	\$155,637
35		\$474,150	\$474,150	0.3321	\$157,465
36		\$454,150	\$454,150	0.3218	\$146,145
37		\$454,150	\$454,150	0.3118	\$141,604
38		\$454,150	\$454,150	0.3021	\$137,199
39		\$454,150	\$454,150	0.2927	\$132,930
40		\$474,150	\$474,150	0.2837	\$134,516
41		\$454,150	\$454,150	0.2749	\$124,846
42		\$454,150	\$454,150	0.2664	\$120,985
43		\$454,150	\$454,150	0.2581	\$117,216
44		\$454,150	\$454,150	0.2501	\$113,583
45		\$474,150	\$474,150	0.2423	\$114,886
46		\$454,150	\$454,150	0.2348	\$106,634
47		\$454,150	\$454,150	0.2275	\$103,319
48		\$454,150	\$454,150	0.2205	\$100,140
49		\$454,150	\$454,150	0.2136	\$97,006
50		\$474,150	\$474,150	0.2070	\$98,149
51		\$454,150	\$454,150	0.2006	\$91,102
52		\$454,150	\$454,150	0.1944	\$88,287
53		\$454,150	\$454,150	0.1884	\$85,562
54		\$454,150	\$454,150	0.1825	\$82,882
55		\$474,150	\$474,150	0.1769	\$83,877
56		\$454,150	\$454,150	0.1714	\$77,841
57		\$454,150	\$454,150	0.1661	\$75,434
58		\$454,150	\$454,150	0.1609	\$73,073
59		\$454,150	\$454,150	0.1559	\$70,802
60		\$474,150	\$474,150	0.1511	\$71,644
61		\$454,150	\$454,150	0.1464	\$66,488

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Table D-53. (Alternative 5), 216-U-10 Pond Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (5 Pages)

62		\$454,150	\$454,150	0.1419	\$64,444
63		\$454,150	\$454,150	0.1375	\$62,446
64		\$454,150	\$454,150	0.1332	\$60,493
65		\$474,150	\$474,150	0.1291	\$61,213
66		\$454,150	\$454,150	0.1251	\$56,814
67		\$454,150	\$454,150	0.1212	\$55,043
68		\$454,150	\$454,150	0.1174	\$53,317
69		\$454,150	\$454,150	0.1138	\$51,682
70		\$474,150	\$474,150	0.1103	\$52,299
71		\$454,150	\$454,150	0.1068	\$48,503
72		\$454,150	\$454,150	0.1035	\$47,004
73		\$454,150	\$454,150	0.1003	\$45,551
74		\$454,150	\$454,150	0.0972	\$44,143
75		\$474,150	\$474,150	0.0942	\$44,665
76		\$454,150	\$454,150	0.0913	\$41,464
77		\$454,150	\$454,150	0.0884	\$40,147
78		\$454,150	\$454,150	0.0857	\$38,921
79		\$454,150	\$454,150	0.0830	\$37,694
80		\$474,150	\$474,150	0.0805	\$38,169
81		\$454,150	\$454,150	0.0780	\$35,424
82		\$454,150	\$454,150	0.0756	\$34,334
83		\$454,150	\$454,150	0.0732	\$33,244
84		\$454,150	\$454,150	0.0709	\$32,199
85		\$474,150	\$474,150	0.0687	\$32,574
86		\$454,150	\$454,150	0.0666	\$30,246
87		\$454,150	\$454,150	0.0645	\$29,293
88		\$454,150	\$454,150	0.0625	\$28,384
89		\$454,150	\$454,150	0.0606	\$27,521
90		\$474,150	\$474,150	0.0587	\$27,833
91		\$454,150	\$454,150	0.0569	\$25,841
92		\$454,150	\$454,150	0.0551	\$25,024
93		\$454,150	\$454,150	0.0534	\$24,252

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Table D-53. (Alternative 5), 216-U-10 Pond Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (5 Pages)

94		\$454,150	\$454,150	0.0518	\$23,525
95		\$474,150	\$474,150	0.0502	\$23,802
96		\$454,150	\$454,150	0.0486	\$22,072
97		\$454,150	\$454,150	0.0471	\$21,390
98		\$454,150	\$454,150	0.0456	\$20,709
99		\$454,150	\$454,150	0.0442	\$20,073
100		\$474,150	\$474,150	0.0429	\$20,341
101		\$454,150	\$454,150	0.0415	\$18,847
102		\$454,150	\$454,150	0.0402	\$18,257
103		\$454,150	\$454,150	0.0390	\$17,712
104		\$454,150	\$454,150	0.0378	\$17,167
105		\$474,150	\$474,150	0.0366	\$17,354
106		\$454,150	\$454,150	0.0355	\$16,122
107		\$454,150	\$454,150	0.0344	\$15,623
108		\$454,150	\$454,150	0.0333	\$15,123
109		\$454,150	\$454,150	0.0323	\$14,669
110		\$474,150	\$474,150	0.0313	\$14,841
111		\$454,150	\$454,150	0.0303	\$13,761
112		\$454,150	\$454,150	0.0294	\$13,352
113		\$454,150	\$454,150	0.0285	\$12,943
114		\$454,150	\$454,150	0.0276	\$12,535
115		\$474,150	\$474,150	0.0267	\$12,660
116		\$454,150	\$454,150	0.0259	\$11,762
117		\$454,150	\$454,150	0.0251	\$11,399
118		\$454,150	\$454,150	0.0243	\$11,036
119		\$454,150	\$454,150	0.0236	\$10,718
120		\$474,150	\$474,150	0.0228	\$10,811
121		\$454,150	\$454,150	0.0221	\$10,037
122		\$454,150	\$454,150	0.0214	\$9,719
123		\$454,150	\$454,150	0.0208	\$9,446
124		\$454,150	\$454,150	0.0201	\$9,128
125		\$474,150	\$474,150	0.0195	\$9,246

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Table D-53. (Alternative 5), 216-U-10 Pond Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (5 Pages)

126		\$454,150	\$454,150	0.0189	\$8,583
127		\$454,150	\$454,150	0.0183	\$8,311
128		\$454,150	\$454,150	0.0177	\$8,038
129		\$454,150	\$454,150	0.0172	\$7,811
130		\$474,150	\$474,150	0.0167	\$7,918
131		\$454,150	\$454,150	0.0161	\$7,312
132		\$454,150	\$454,150	0.0156	\$7,085
133		\$454,150	\$454,150	0.0152	\$6,903
134		\$454,150	\$454,150	0.0147	\$6,676
135		\$474,150	\$474,150	0.0142	\$6,733
136		\$454,150	\$454,150	0.0138	\$6,267
137		\$454,150	\$454,150	0.0134	\$6,086
138		\$454,150	\$454,150	0.0129	\$5,859
139		\$454,150	\$454,150	0.0125	\$5,677
140		\$474,150	\$474,150	0.0122	\$5,785
141		\$454,150	\$454,150	0.0118	\$5,359
142		\$454,150	\$454,150	0.0114	\$5,177
143		\$454,150	\$454,150	0.0111	\$5,041
144		\$454,150	\$454,150	0.0107	\$4,859
145		\$474,150	\$474,150	0.0104	\$4,931
146		\$454,150	\$454,150	0.0101	\$4,587
147		\$454,150	\$454,150	0.0098	\$4,451
148		\$454,150	\$454,150	0.0094	\$4,269
149		\$454,150	\$454,150	0.0092	\$4,178
150		\$474,150	\$474,150	0.0089	\$4,220
NON-DISCOUNTED COST		\$185,022,732		TOTAL PRESENT WORTH	\$130,482,836

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where e = 3.2% and n = year (1 - 150).

Table D-54. (Alternative 5), 216-U-10 Pond Representative Site, Calculation Sheet
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Purchase, Deliver, and Place Topsoil											
Purchase Pea Gravel (Includes Purchase and Delivery)	871	cy		\$55.67			\$0	\$48,489	\$0	\$0	\$48,489
Silt Loam, Excavate/Load (7,841 cy)	7	day			\$592.00	\$1,190.17	\$0	\$0	\$4,144	\$8,331	\$12,475
Silt Loam Hauling, 5 Trucks, 7 Days/Each	35	day			\$296.00	\$398.55	\$0	\$0	\$10,360	\$13,949	\$24,309
Equipment Mob/Demob	9	ea			\$100.00	\$352.00	\$0	\$0	\$900	\$3,168	\$4,068
Place Silt Loam/Pea Gravel, Front End Loader	7	day			\$296.00	\$630.27	\$0	\$0	\$2,072	\$4,412	\$6,484
Place Silt Loam/Pea Gravel, Bulldozer with Tiller	7	day			\$296.00	\$951.52	\$0	\$0	\$2,072	\$6,661	\$8,733
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	15,681	sy		\$0.26	\$1.19	\$0.18	\$0	\$4,077	\$18,660	\$2,823	\$25,560
Oversight	15	days			\$448.00		\$0	\$0	\$6,720	\$0	\$6,720

Total Cost	\$0	\$52,566	\$44,928	\$39,344	\$136,838
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Decontamination Pad Construction											
Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
3" SCH 80 PVC Pipe	5	lf		\$1.63			\$0	\$8	\$0	\$0	\$8
Sump Pump	1	ea		\$2,005.00			\$0	\$2,005	\$0	\$0	\$2,005
Sump Pump Hoses (50 ft)	1	ea		\$493.00			\$0	\$493	\$0	\$0	\$493
Sump Construction (2)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76
Temporary Storage Tank (1,000 gal)	2	ea		\$1,674.00			\$0	\$3,348	\$0	\$0	\$3,348
4 Laborers, 5 days to Build/Remove	5	day			\$1,184.00		\$0	\$0	\$5,920	\$0	\$5,920

Total Cost	\$0	\$6,683	\$5,920	\$311	\$12,913
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Table D-55. (Alternative 5) 216-T-26 Crib representative Site, Capital Cost
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
FLUOR HANFORD COST											
OVERSIGHT											
Construction Oversight (Includes 1 RCT)	31	days			\$1,720.00		\$0	\$0	\$53,320	\$0	\$53,320
RCT Decontamination Crew (4 RCTs)	1	days			\$1,792.00		\$0	\$0	\$1,792	\$0	\$1,792
RCT on Excavator (1)	6	days			\$448.00		\$0	\$0	\$2,688	\$0	\$2,688
SAMPLING CREWS AND SAMPLING											
Overburden Samples (6 Per Site)	6	ea	\$1,100.00				\$6,600	\$0	\$0	\$0	\$6,600
LLW Samples (1 per 845 lcy Contaminated Soil, or 6 Min)	6	ea	\$5,000.00				\$30,000	\$0	\$0	\$0	\$30,000
QC Samples (5% of Total Samples or 1 minimum)	1	ea	\$5,000.00				\$5,000	\$0	\$0	\$0	\$5,000
Air Sampling and Crew (Sampler and RCT)	8	days	\$1,000.00		\$896.00	\$500.00	\$8,000	\$0	\$7,168	\$4,000	\$19,168
Soil/Sediment Sampling Crew (Sampler 50% and RCT)	6	days			\$672.00		\$0	\$0	\$4,032	\$0	\$4,032
TRANSPORTATION AND DISPOSAL											
Transportation and Disposal of Rolloff Boxes to ERDF	37	ea	\$1,100.00				\$40,700	\$0	\$0	\$0	\$40,700
Fluor Hanford Field Cost							\$90,300	\$0	\$69,000	\$4,000	\$163,300
Fluor Hanford G & A on Labor Cost @ 15%							\$0	\$0	\$10,350	\$0	\$10,350
Fluor Hanford G & A on Material Cost @ 15%							\$0	\$0	\$0	\$0	\$0
Fluor Hanford G & A on Equipment Cost @ 15%							\$0	\$0	\$0	\$600	\$600
Fluor Hanford Total Cost							\$90,300	\$0	\$79,350	\$4,600	\$174,250
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Office Trailer	1.5	mo				\$350.00	\$0	\$0	\$0	\$525	\$525
Field Office Support	1.5	mo		\$139.00			\$0	\$209	\$0	\$0	\$209
Storage Trailer	1.5	mo				\$105.00	\$0	\$0	\$0	\$158	\$158
Equipment Mobilization/Demobilization	15	ea			\$100.00	\$352.00	\$0	\$0	\$1,500	\$5,280	\$6,780
Personnel Mobilization/Demobilization	17	ea			\$592.00		\$0	\$0	\$10,064	\$0	\$10,064
Construction Survey (2 surveys 0.4 acres each)	0.8	ac	\$1,748.00				\$1,398	\$0	\$0	\$0	\$1,398
Site Utilities, Generator and Oiler	1.5	mo			\$6,216.00	\$1,394.80	\$0	\$0	\$9,324	\$2,092	\$11,416
Install Temporary Fence (Blaze Orange)	576	lf		\$1.63	\$1.16		\$0	\$939	\$668	\$0	\$1,607
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384

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Table D-55. (Alternative 5) 216-T-26 Crib representative Site, Capital Cost
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Construct Decontamination Pad (See Table D-58)	1	ea		\$6,682.86	\$5,920.00	\$310.56	\$0	\$6,683	\$5,920	\$311	\$12,913
DECONTAMINATION											
Decontamination Crew (4 Laborers)	1	day			\$1,184.00		\$0	\$0	\$1,184	\$0	\$1,184
Water for Decon Process (1,000 gal/month)	48	gal		\$0.20			\$0	\$10	\$0	\$0	\$10
EXCAVATION											
Water Truck	6	day			\$296.00	\$80.00	\$0	\$0	\$1,776	\$480	\$2,256
Hydraulic Excavator (2 excavators for 6 days)	12	day			\$296.00	\$559.90	\$0	\$0	\$3,552	\$6,719	\$10,271
Front End Loader	5	day			\$296.00	\$630.27	\$0	\$0	\$1,480	\$3,151	\$4,631
DYNAMIC COMPACTION											
Mobilization/Demobilization of Crane	1	ea			\$5,375.00	\$5,225.00	\$0	\$0	\$5,375	\$5,225	\$10,600
Crane, Compaction with Oiler	2	day			\$592.00	\$1,851.60	\$0	\$0	\$1,184	\$3,703	\$4,887
Water Truck	1	day			\$296.00	\$80.00	\$0	\$0	\$296	\$80	\$376
SITE RESTORATION											
Fill Material, Front End Loader (833 cy of overburden)	1.0	day			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Fill Material, Bulldozer (833 cy of overburden)	1.0	day			\$296.00	\$656.42	\$0	\$0	\$296	\$656	\$952
Fill Material, Front End Loader (6,032 cy of overburden)	4.0	day			\$296.00	\$630.27	\$0	\$0	\$1,184	\$2,521	\$3,705
Fill Material, Bulldozer (6,032 cy of overburden)	4.0	day			\$296.00	\$656.42	\$0	\$0	\$1,184	\$2,626	\$3,810
Fill Material, Vibratory Roller	4.0	day			\$296.00	\$353.98	\$0	\$0	\$1,184	\$1,416	\$2,600
Compacted Silt Loam, Excavate/Load (782 cy)	1	day			\$592.00	\$1,190.17	\$0	\$0	\$592	\$1,190	\$1,782
Compacted Silt Loam Hauling, 5 Trucks, 1 Days/Ea	5	day			\$296.00	\$398.55	\$0	\$0	\$1,480	\$1,993	\$3,473
Compacted Silt Loam Layer, Front End Loader	1	day			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Compacted Silt Loam Layer, Bulldozer	1	day			\$296.00	\$656.42	\$0	\$0	\$296	\$656	\$952
Compacted Silt Loam Layer, Vibratory Roller	1	day			\$296.00	\$353.98	\$0	\$0	\$296	\$354	\$650
Silt Loam, Excavate/Load (767 cy)	1	day			\$592.00	\$1,190.17	\$0	\$0	\$592	\$1,190	\$1,782
Purchase Pea Gravel Layer	86	cy		\$55.67			\$0	\$4,788	\$0	\$0	\$4,788
Silt Loam Hauling, 5 Trucks, 1 Day/Each	5	day			\$296.00	\$398.55	\$0	\$0	\$1,480	\$1,993	\$3,473
Silt Loam/Pea Gravel Layer, Front End Loader	1	day			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Silt Loam/Pea Gravel Layer, Bulldozer with Tiller	1	day			\$296.00	\$951.52	\$0	\$0	\$296	\$952	\$1,248
Revegetation (Fine Grade & Seed Topsoil)	1,920	sy		\$0.26	\$1.19	\$0.18	\$0	\$499	\$2,285	\$346	\$3,130
Water Truck	10.0	day			\$296.00	\$80.00	\$0	\$0	\$2,960	\$800	\$3,760
MISCELLANEOUS											
Support Personnel	31	day			\$1,896.00		\$0	\$0	\$58,776	\$0	\$58,776
Post Construction Documents	160	hr			\$50.00		\$0	\$0	\$8,000	\$0	\$8,000

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Table D-55. (Alternative 5) 216-T-26 Crib representative Site, Capital Cost
 200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (3 Pages)

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Construction Contractor Field Cost							\$1,398	\$41,727	\$125,564	\$48,639	\$217,328
Direct Markup on Labor @ 25%							\$0	\$0	\$31,391	\$0	\$31,391
Direct Markup on Materials @ 10%							\$0	\$4,173	\$0	\$0	\$4,173
Direct Markup on Subcontracts @ 10%							\$140	\$0	\$0	\$0	\$140
Construction Contractor G&A @ 26.5%							\$371	\$11,058	\$33,274	\$12,889	\$57,592
Construction Contractor Subtotal							\$1,909	\$56,957	\$190,229	\$61,528	\$310,623
Fluor Hanford G&A on Construction Contractor Cost @ 15%							\$286	\$8,544	\$28,534	\$9,229	\$46,594
Construction Contractor Total Cost							\$2,195	\$65,500	\$218,764	\$70,757	\$357,217
Fluor Hanford Total Cost (From Above)							\$90,300	\$0	\$79,350	\$4,600	\$174,250
Project Subtotal							\$92,495	\$65,500	\$298,114	\$75,357	\$531,467
Contingency on Field Costs @ 25%											\$132,867
TOTAL COST											\$664,334

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Table D-56. (Alternative 5) 216-T-26 Crib representative Site, Periodic Cost
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State.

Item	Item Cost		Notes
	Annually	per 5 ears	
Site Inspection	\$448		Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 14,400 ft ² .
Radiation Survey of Surface Soil	\$3,000		Cost is based on \$1,000 for every 5,000 square feet (Site = 14,400 ft ²)
Cover Maintenance	\$8,337		Cost includes the purchase of soil to repair ruts and holes over 10% of the site area. Refer to the calculation sheet.
Reporting	\$10,000		Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000	Prepare Site Condition Report every 5 years.
TOTALS	\$21,785	\$20,000	

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Table D-57. (Alternative 5) 216-T-26 Crib representative Site, Present Worth Analysis
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$664,334		\$664,334	1.0000	\$664,334
1		\$21,785	\$21,785	0.9690	\$21,109
2		\$21,785	\$21,785	0.9389	\$20,454
3		\$21,785	\$21,785	0.9098	\$19,820
4		\$21,785	\$21,785	0.8816	\$19,205
5		\$41,785	\$41,785	0.8543	\$35,697
6		\$21,785	\$21,785	0.8278	\$18,033
7		\$21,785	\$21,785	0.8021	\$17,473
8		\$21,785	\$21,785	0.7773	\$16,933
9		\$21,785	\$21,785	0.7532	\$16,408
10		\$41,785	\$41,785	0.7298	\$30,494
11		\$21,785	\$21,785	0.7072	\$15,406
12		\$21,785	\$21,785	0.6852	\$14,927
13		\$21,785	\$21,785	0.6640	\$14,465
14		\$21,785	\$21,785	0.6434	\$14,016
15		\$41,785	\$41,785	0.6235	\$26,053
16		\$21,785	\$21,785	0.6041	\$13,160
17		\$21,785	\$21,785	0.5854	\$12,753
18		\$21,785	\$21,785	0.5672	\$12,356
19		\$21,785	\$21,785	0.5496	\$11,973
20		\$41,785	\$41,785	0.5326	\$22,254
21		\$21,785	\$21,785	0.5161	\$11,243
22		\$21,785	\$21,785	0.5001	\$10,894
23		\$21,785	\$21,785	0.4846	\$10,557
24		\$21,785	\$21,785	0.4696	\$10,230
25		\$41,785	\$41,785	0.4550	\$19,012
26		\$21,785	\$21,785	0.4409	\$9,605
27		\$21,785	\$21,785	0.4272	\$9,306
28		\$21,785	\$21,785	0.4140	\$9,019
29		\$21,785	\$21,785	0.4011	\$8,738
30		\$41,785	\$41,785	0.3887	\$16,242
31		\$21,785	\$21,785	0.3766	\$8,204
32		\$21,785	\$21,785	0.3650	\$7,951
33		\$21,785	\$21,785	0.3536	\$7,703
34		\$21,785	\$21,785	0.3427	\$7,466
35		\$41,785	\$41,785	0.3321	\$13,877
36		\$21,785	\$21,785	0.3218	\$7,010
37		\$21,785	\$21,785	0.3118	\$6,792
38		\$21,785	\$21,785	0.3021	\$6,581
39		\$21,785	\$21,785	0.2927	\$6,376
40		\$41,785	\$41,785	0.2837	\$11,854
41		\$21,785	\$21,785	0.2749	\$5,989
42		\$21,785	\$21,785	0.2664	\$5,803
43		\$21,785	\$21,785	0.2581	\$5,623
44		\$21,785	\$21,785	0.2501	\$5,448
45		\$41,785	\$41,785	0.2423	\$10,124
46		\$21,785	\$21,785	0.2348	\$5,115

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Table D-57. (Alternative 5) 216-T-26 Crib representative Site, Present Worth Analysis
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (4 Pages)

47		\$21,785	\$21,785	0.2275	\$4,956
48		\$21,785	\$21,785	0.2205	\$4,804
49		\$21,785	\$21,785	0.2136	\$4,653
50		\$41,785	\$41,785	0.2070	\$8,649
51		\$21,785	\$21,785	0.2006	\$4,370
52		\$21,785	\$21,785	0.1944	\$4,235
53		\$21,785	\$21,785	0.1884	\$4,104
54		\$21,785	\$21,785	0.1825	\$3,976
55		\$41,785	\$41,785	0.1769	\$7,392
56		\$21,785	\$21,785	0.1714	\$3,734
57		\$21,785	\$21,785	0.1661	\$3,618
58		\$21,785	\$21,785	0.1609	\$3,505
59		\$21,785	\$21,785	0.1559	\$3,396
60		\$41,785	\$41,785	0.1511	\$6,314
61		\$21,785	\$21,785	0.1464	\$3,189
62		\$21,785	\$21,785	0.1419	\$3,091
63		\$21,785	\$21,785	0.1375	\$2,995
64		\$21,785	\$21,785	0.1332	\$2,902
65		\$41,785	\$41,785	0.1291	\$5,394
66		\$21,785	\$21,785	0.1251	\$2,725
67		\$21,785	\$21,785	0.1212	\$2,640
68		\$21,785	\$21,785	0.1174	\$2,558
69		\$21,785	\$21,785	0.1138	\$2,479
70		\$41,785	\$41,785	0.1103	\$4,609
71		\$21,785	\$21,785	0.1068	\$2,327
72		\$21,785	\$21,785	0.1035	\$2,255
73		\$21,785	\$21,785	0.1003	\$2,185
74		\$21,785	\$21,785	0.0972	\$2,117
75		\$41,785	\$41,785	0.0942	\$3,936
76		\$21,785	\$21,785	0.0913	\$1,989
77		\$21,785	\$21,785	0.0884	\$1,926
78		\$21,785	\$21,785	0.0857	\$1,867
79		\$21,785	\$21,785	0.0830	\$1,808
80		\$41,785	\$41,785	0.0805	\$3,364
81		\$21,785	\$21,785	0.0780	\$1,699
82		\$21,785	\$21,785	0.0756	\$1,647
83		\$21,785	\$21,785	0.0732	\$1,595
84		\$21,785	\$21,785	0.0709	\$1,545
85		\$41,785	\$41,785	0.0687	\$2,871
86		\$21,785	\$21,785	0.0666	\$1,451
87		\$21,785	\$21,785	0.0645	\$1,405
88		\$21,785	\$21,785	0.0625	\$1,362
89		\$21,785	\$21,785	0.0606	\$1,320
90		\$41,785	\$41,785	0.0587	\$2,453
91		\$21,785	\$21,785	0.0569	\$1,240
92		\$21,785	\$21,785	0.0551	\$1,200
93		\$21,785	\$21,785	0.0534	\$1,163
94		\$21,785	\$21,785	0.0518	\$1,128
95		\$41,785	\$41,785	0.0502	\$2,098

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Table D-57. (Alternative 5) 216-T-26 Crib representative Site, Present Worth Analysis
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (4 Pages)

96		\$21,785	\$21,785	0.0486	\$1,059
97		\$21,785	\$21,785	0.0471	\$1,026
98		\$21,785	\$21,785	0.0456	\$993
99		\$21,785	\$21,785	0.0442	\$963
100		\$41,785	\$41,785	0.0429	\$1,793
101		\$21,785	\$21,785	0.0415	\$904
102		\$21,785	\$21,785	0.0402	\$876
103		\$21,785	\$21,785	0.0390	\$850
104		\$21,785	\$21,785	0.0378	\$823
105		\$41,785	\$41,785	0.0366	\$1,529
106		\$21,785	\$21,785	0.0355	\$773
107		\$21,785	\$21,785	0.0344	\$749
108		\$21,785	\$21,785	0.0333	\$725
109		\$21,785	\$21,785	0.0323	\$704
110		\$41,785	\$41,785	0.0313	\$1,308
111		\$21,785	\$21,785	0.0303	\$660
112		\$21,785	\$21,785	0.0294	\$640
113		\$21,785	\$21,785	0.0285	\$621
114		\$21,785	\$21,785	0.0276	\$601
115		\$41,785	\$41,785	0.0267	\$1,116
116		\$21,785	\$21,785	0.0259	\$564
117		\$21,785	\$21,785	0.0251	\$547
118		\$21,785	\$21,785	0.0243	\$529
119		\$21,785	\$21,785	0.0236	\$514
120		\$41,785	\$41,785	0.0228	\$953
121		\$21,785	\$21,785	0.0221	\$481
122		\$21,785	\$21,785	0.0214	\$466
123		\$21,785	\$21,785	0.0208	\$453
124		\$21,785	\$21,785	0.0201	\$438
125		\$41,785	\$41,785	0.0195	\$815
126		\$21,785	\$21,785	0.0189	\$412
127		\$21,785	\$21,785	0.0183	\$399
128		\$21,785	\$21,785	0.0177	\$386
129		\$21,785	\$21,785	0.0172	\$375
130		\$41,785	\$41,785	0.0167	\$698
131		\$21,785	\$21,785	0.0161	\$351
132		\$21,785	\$21,785	0.0156	\$340
133		\$21,785	\$21,785	0.0152	\$331
134		\$21,785	\$21,785	0.0147	\$320
135		\$41,785	\$41,785	0.0142	\$593
136		\$21,785	\$21,785	0.0138	\$301
137		\$21,785	\$21,785	0.0134	\$292
138		\$21,785	\$21,785	0.0129	\$281
139		\$21,785	\$21,785	0.0125	\$272
140		\$41,785	\$41,785	0.0122	\$510
141		\$21,785	\$21,785	0.0118	\$257
142		\$21,785	\$21,785	0.0114	\$248
143		\$21,785	\$21,785	0.0111	\$242
144		\$21,785	\$21,785	0.0107	\$233

Table D-57. (Alternative 5) 216-T-26 Crib representative Site, Present Worth Analysis
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State. (4 Pages)

145		\$41,785	\$41,785	0.0104	\$435
146		\$21,785	\$21,785	0.0101	\$220
147		\$21,785	\$21,785	0.0098	\$213
148		\$21,785	\$21,785	0.0094	\$205
149		\$21,785	\$21,785	0.0092	\$200
150		\$41,785	\$41,785	0.0089	\$372
NON- DISCOUNTED COST		\$4,532,027		TOTAL PRESENT WORTH	\$1,455,285

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where $e = 3.2\%$ and n = year (1 - 150).

Table D-58. (Alternative 5) 216-T-26 Crib representative Site, Calculation Sheet
200-TW-1 Scavenged Tank Waste Group, Hanford Site, Washington State.

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Purchase, Deliver, and Place Topsoil											
Purchase Pea Gravel (Includes Purchase and Delivery)	9	cy		\$55.67			\$0	\$501	\$0	\$0	\$501
Silt Loam, Excavate/Load (80 cy)	1	day			\$296.00	\$559.90	\$0	\$0	\$296	\$560	\$856
Silt Loam Hauling, 2 Trucks, 1 Days/Each	2	day			\$296.00	\$398.55	\$0	\$0	\$592	\$797	\$1,389
Equipment Mob/Demob	5	ea			\$100.00	\$352.00	\$0	\$0	\$500	\$1,760	\$2,260
Place Silt Loam/Pea Gravel, Front End Loader	1	day			\$296.00	\$630.27	\$0	\$0	\$296	\$630	\$926
Place Silt Loam/Pea Gravel, Bulldozer with Tiller	1	day			\$296.00	\$951.52	\$0	\$0	\$296	\$952	\$1,248
Fine Grading and Seeding, Incl. Lime, Fert, and Seed	160	sy		\$0.26	\$1.19	\$0.18	\$0	\$42	\$190	\$29	\$261
Oversight	2	days			\$448.00		\$0	\$0	\$896	\$0	\$896
Total Cost							\$0	\$543	\$3,066	\$4,728	\$8,337

Decontamination Pad Construction											
Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
3" SCH 80 PVC Pipe	5	lf		\$1.63			\$0	\$8	\$0	\$0	\$8
Sump Pump	1	ea		\$2,005.00			\$0	\$2,005	\$0	\$0	\$2,005
Sump Pump Hoses (50 lf)	1	ea		\$493.00			\$0	\$493	\$0	\$0	\$493
Sump Construction (2)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76
Temporary Storage Tank (1,000 gal)	2	ea		\$1,674.00			\$0	\$3,348	\$0	\$0	\$3,348
4 Laborers, 5 days to Build/Remove	5	day			\$1,184.00		\$0	\$0	\$5,920	\$0	\$5,920
Total Cost							\$0	\$6,683	\$5,920	\$311	\$12,913

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Table D-59 (Alternative 6), 216-Z-11 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State, (2 Pages).

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
FLUOR HANFORD COST											
OVERSIGHT											
Construction Oversight (Includes 1 RCT)	3,463	days			\$1,720.00		\$0	\$0	\$5,956,360	\$0	\$5,956,360
RCT Decontamination Crew (4 RCT)	21	days			\$1,792.00		\$0	\$0	\$37,632	\$0	\$37,632
SITE AMENITIES											
Office Trailer	39.6	mo				\$350.00	\$0	\$0	\$0	\$13,860	\$13,860
Field Office Support	39.6	mo		\$139.00		0	\$0	\$5,504	\$0	\$0	\$5,504
Storage Trailer	39.6	mo				\$105.00	\$0	\$0	\$0	\$4,158	\$4,158
Fluor Hanford Field Cost							\$0	\$5,504	\$5,993,992	\$18,018	\$6,017,514
Fluor Hanford G & A on Labor Cost @ 15%									\$899,099		\$899,099
Fluor Hanford G & A on Material Cost @ 15%								\$826			\$826
Fluor Hanford G & A on Equipment Cost @ 15%										\$2,703	\$2,703
Fluor Hanford Total Cost							\$0	\$6,330	\$6,893,091	\$20,721	\$6,920,142
CONSTRUCTION CONTRACTOR COST											
MOBILIZATION/DEMOBILIZATION AND FIELD SUPPORT											
Construction Survey (2 surveys 2.2 acres each)	4.4	ac	\$1,748.00				\$7,691	\$0	\$0	\$0	\$7,691
Install Temporary Fence (Blaze Orange)	10,637	lf		\$1.63	\$1.16		\$0	\$17,338	\$12,339	\$0	\$29,677
Haul Road - Gravel, 6" thick	4,400	sy		\$6.50	\$0.33	\$0.53	\$0	\$28,600	\$1,452	\$2,332	\$32,384
Construct Decontamination Pad (See Table D-62)	1	ea		\$6,682.86	\$5,920.00	\$310.56	\$0	\$6,683	\$5,920	\$311	\$12,913
DECONTAMINATION											
Decontamination Crew (4 Laborers)	21	day			\$1,184.00		\$0	\$0	\$24,864	\$0	\$24,864
Water for Decon Process (1,000 gal/month)	1,000	gal		\$0.20			\$0	\$200	\$0	\$0	\$200
SITE RESTORATION											
Fine Grading and Seeding (Lime, Fert, and Seed Incl.)	10,592	sy		\$0.26	\$1.19	\$0.18	\$0	\$2,754	\$12,604	\$1,907	\$17,265
Water Truck	11	day			\$296.00	\$80.00	\$0	\$0	\$3,256	\$880	\$4,136

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Table D-59 (Alternative 6), 216-Z-11 Ditch Representative Site, Capital Cost
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State, (2 Pages).

Item	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Sub-contract	Material	Labor	Equip-ment	Sub-contract	Material	Labor	Equip-ment	
Construction Contractor Field Cost							\$7,691	\$55,575	\$60,435	\$5,429	\$129,131
Direct Markup on Labor @ 25%									\$15,109		\$15,109
Direct Markup on Materials @ 10%								\$5,558			\$5,558
Direct Markup on Subcontracts @ 10%							\$769				\$769
Construction Contractor G&A @ 26.5%							\$2,038	\$14,727	\$16,015	\$1,439	\$34,220
Construction Contractor Subtotal							\$10,498	\$75,860	\$91,560	\$6,868	\$184,786
Fluor Hanford G&A on Construction Contractor Cost @ 15%							\$1,575	\$11,379	\$13,734	\$1,030	\$27,718
Construction Contractor Total Cost							\$12,073	\$87,239	\$105,294	\$7,898	\$212,504
Fluor Hanford Total Cost (From Above)							\$0	\$6,330	\$6,893,091	\$20,721	\$6,920,142
Project Subtotal							\$12,073	\$93,569	\$6,998,384	\$28,619	\$7,132,645
Contingency on Total Field Costs @ 25%											\$1,783,161
Total Cost Minus Subsurface Planar Vitrification Cost											\$8,915,807
Mob/Demob for Subsurface Planar Vitrification Cost	1	ls	\$642,473.00				\$642,473	\$0	\$0	\$0	\$642,473
Subsurface Planar Vitrification Cost	44,133	cy	\$1,878.00				\$82,881,774	\$0	\$0	\$0	\$82,881,774
TOTAL COST											\$92,440,054

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Table D-60. (Alternative 6), 216-Z-11 Ditch Representative Site, Periodic Cost
200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Item	Item Cost		Notes
	Annually	per 5 Years	
Site Inspection	\$1,568		Cost is based on a two person crew (\$112/hr). It is assumed to require 2 hours to inspect sites up to 12,500 ft ² in size. An additional 2 hours is required for each additional 12,500 ft ² . The site area = 79,440 ft ² .
Radiation Survey of surface soil	\$16,000		Cost is based on \$1,000 for every 5,000 square feet (Site = 79,440 ft ²)
Reporting	\$10,000		Obtain lab, prepare sampling plan, document sampling event and results.
Site Reviews		\$20,000	Prepare Site Condition Report every 5 years.

TOTALS	\$27,568	\$20,000
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Table D-61. (Alternative 6), 216-Z-11 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
0	\$92,440,054		\$92,440,054	1.0000	\$92,440,054
1		\$27,568	\$27,568	0.9690	\$26,713
2		\$27,568	\$27,568	0.9389	\$25,884
3		\$27,568	\$27,568	0.9098	\$25,081
4		\$27,568	\$27,568	0.8816	\$24,304
5		\$47,568	\$47,568	0.8543	\$40,637
6		\$27,568	\$27,568	0.8278	\$22,821
7		\$27,568	\$27,568	0.8021	\$22,112
8		\$27,568	\$27,568	0.7773	\$21,429
9		\$27,568	\$27,568	0.7532	\$20,764
10		\$47,568	\$47,568	0.7298	\$34,715
11		\$27,568	\$27,568	0.7072	\$19,496
12		\$27,568	\$27,568	0.6852	\$18,890
13		\$27,568	\$27,568	0.6640	\$18,305
14		\$27,568	\$27,568	0.6434	\$17,737
15		\$47,568	\$47,568	0.6235	\$29,659
16		\$27,568	\$27,568	0.6041	\$16,654
17		\$27,568	\$27,568	0.5854	\$16,138
18		\$27,568	\$27,568	0.5672	\$15,637
19		\$27,568	\$27,568	0.5496	\$15,151
20		\$47,568	\$47,568	0.5326	\$25,335
21		\$27,568	\$27,568	0.5161	\$14,228
22		\$27,568	\$27,568	0.5001	\$13,787
23		\$27,568	\$27,568	0.4846	\$13,359
24		\$27,568	\$27,568	0.4696	\$12,946
25		\$47,568	\$47,568	0.4550	\$21,643
26		\$27,568	\$27,568	0.4409	\$12,155
27		\$27,568	\$27,568	0.4272	\$11,777
28		\$27,568	\$27,568	0.4140	\$11,413
29		\$27,568	\$27,568	0.4011	\$11,058
30		\$47,568	\$47,568	0.3887	\$18,490
31		\$27,568	\$27,568	0.3766	\$10,382
32		\$27,568	\$27,568	0.3650	\$10,062
33		\$27,568	\$27,568	0.3536	\$9,748
34		\$27,568	\$27,568	0.3427	\$9,448
35		\$47,568	\$47,568	0.3321	\$15,797
36		\$27,568	\$27,568	0.3218	\$8,871
37		\$27,568	\$27,568	0.3118	\$8,596
38		\$27,568	\$27,568	0.3021	\$8,328
39		\$27,568	\$27,568	0.2927	\$8,069
40		\$47,568	\$47,568	0.2837	\$13,495
41		\$27,568	\$27,568	0.2749	\$7,578
42		\$27,568	\$27,568	0.2664	\$7,344
43		\$27,568	\$27,568	0.2581	\$7,115
44		\$27,568	\$27,568	0.2501	\$6,895

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Table D-61. (Alternative 6), 216-Z-11 Ditch Representative Site,
 Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
45		\$47,568	\$47,568	0.2423	\$11,526
46		\$27,568	\$27,568	0.2348	\$6,473
47		\$27,568	\$27,568	0.2275	\$6,272
48		\$27,568	\$27,568	0.2205	\$6,079
49		\$27,568	\$27,568	0.2136	\$5,889
50		\$47,568	\$47,568	0.2070	\$9,847
51		\$27,568	\$27,568	0.2006	\$5,530
52		\$27,568	\$27,568	0.1944	\$5,359
53		\$27,568	\$27,568	0.1884	\$5,194
54		\$27,568	\$27,568	0.1825	\$5,031
55		\$47,568	\$47,568	0.1769	\$8,415
56		\$27,568	\$27,568	0.1714	\$4,725
57		\$27,568	\$27,568	0.1661	\$4,579
58		\$27,568	\$27,568	0.1609	\$4,436
59		\$27,568	\$27,568	0.1559	\$4,298
60		\$47,568	\$47,568	0.1511	\$7,188
61		\$27,568	\$27,568	0.1464	\$4,036
62		\$27,568	\$27,568	0.1419	\$3,912
63		\$27,568	\$27,568	0.1375	\$3,791
64		\$27,568	\$27,568	0.1332	\$3,672
65		\$47,568	\$47,568	0.1291	\$6,141
66		\$27,568	\$27,568	0.1251	\$3,449
67		\$27,568	\$27,568	0.1212	\$3,341
68		\$27,568	\$27,568	0.1174	\$3,236
69		\$27,568	\$27,568	0.1138	\$3,137
70		\$47,568	\$47,568	0.1103	\$5,247
71		\$27,568	\$27,568	0.1068	\$2,944
72		\$27,568	\$27,568	0.1035	\$2,853
73		\$27,568	\$27,568	0.1003	\$2,765
74		\$27,568	\$27,568	0.0972	\$2,680
75		\$47,568	\$47,568	0.0942	\$4,481
76		\$27,568	\$27,568	0.0913	\$2,517
77		\$27,568	\$27,568	0.0884	\$2,437
78		\$27,568	\$27,568	0.0857	\$2,363
79		\$27,568	\$27,568	0.0830	\$2,288
80		\$47,568	\$47,568	0.0805	\$3,829
81		\$27,568	\$27,568	0.0780	\$2,150
82		\$27,568	\$27,568	0.0756	\$2,084
83		\$27,568	\$27,568	0.0732	\$2,018
84		\$27,568	\$27,568	0.0709	\$1,955
85		\$47,568	\$47,568	0.0687	\$3,268
86		\$27,568	\$27,568	0.0666	\$1,836
87		\$27,568	\$27,568	0.0645	\$1,778
88		\$27,568	\$27,568	0.0625	\$1,723
89		\$27,568	\$27,568	0.0606	\$1,671

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Table D-61. (Alternative 6), 216-Z-11 Ditch Representative Site,
 Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
 Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
90		\$47,568	\$47,568	0.0587	\$2,792
91		\$27,568	\$27,568	0.0569	\$1,569
92		\$27,568	\$27,568	0.0551	\$1,519
93		\$27,568	\$27,568	0.0534	\$1,472
94		\$27,568	\$27,568	0.0518	\$1,428
95		\$47,568	\$47,568	0.0502	\$2,388
96		\$27,568	\$27,568	0.0486	\$1,340
97		\$27,568	\$27,568	0.0471	\$1,298
98		\$27,568	\$27,568	0.0456	\$1,257
99		\$27,568	\$27,568	0.0442	\$1,219
100		\$47,568	\$47,568	0.0429	\$2,041
101		\$27,568	\$27,568	0.0415	\$1,144
102		\$27,568	\$27,568	0.0402	\$1,108
103		\$27,568	\$27,568	0.0390	\$1,075
104		\$27,568	\$27,568	0.0378	\$1,042
105		\$47,568	\$47,568	0.0366	\$1,741
106		\$27,568	\$27,568	0.0355	\$979
107		\$27,568	\$27,568	0.0344	\$948
108		\$27,568	\$27,568	0.0333	\$918
109		\$27,568	\$27,568	0.0323	\$890
110		\$47,568	\$47,568	0.0313	\$1,489
111		\$27,568	\$27,568	0.0303	\$835
112		\$27,568	\$27,568	0.0294	\$810
113		\$27,568	\$27,568	0.0285	\$786
114		\$27,568	\$27,568	0.0276	\$761
115		\$47,568	\$47,568	0.0267	\$1,270
116		\$27,568	\$27,568	0.0259	\$714
117		\$27,568	\$27,568	0.0251	\$692
118		\$27,568	\$27,568	0.0243	\$670
119		\$27,568	\$27,568	0.0236	\$651
120		\$47,568	\$47,568	0.0228	\$1,085
121		\$27,568	\$27,568	0.0221	\$609
122		\$27,568	\$27,568	0.0214	\$590
123		\$27,568	\$27,568	0.0208	\$573
124		\$27,568	\$27,568	0.0201	\$554
125		\$47,568	\$47,568	0.0195	\$928
126		\$27,568	\$27,568	0.0189	\$521
127		\$27,568	\$27,568	0.0183	\$504
128		\$27,568	\$27,568	0.0177	\$488
129		\$27,568	\$27,568	0.0172	\$474
130		\$47,568	\$47,568	0.0167	\$794
131		\$27,568	\$27,568	0.0161	\$444
132		\$27,568	\$27,568	0.0156	\$430
133		\$27,568	\$27,568	0.0152	\$419
134		\$27,568	\$27,568	0.0147	\$405

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Table D-61. (Alternative 6), 216-Z-11 Ditch Representative Site,
Present Worth Analysis 200-CW-5 U Pond/Z-Ditches Cooling Water Group,
Hanford Site, Washington State. (4 Pages)

Year	Capital Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 3.2% ¹	Present Worth
135		\$47,568	\$47,568	0.0142	\$675
136		\$27,568	\$27,568	0.0138	\$380
137		\$27,568	\$27,568	0.0134	\$369
138		\$27,568	\$27,568	0.0129	\$356
139		\$27,568	\$27,568	0.0125	\$345
140		\$47,568	\$47,568	0.0122	\$580
141		\$27,568	\$27,568	0.0118	\$325
142		\$27,568	\$27,568	0.0114	\$314
143		\$27,568	\$27,568	0.0111	\$306
144		\$27,568	\$27,568	0.0107	\$295
145		\$47,568	\$47,568	0.0104	\$495
146		\$27,568	\$27,568	0.0101	\$278
147		\$27,568	\$27,568	0.0098	\$270
148		\$27,568	\$27,568	0.0094	\$259
149		\$27,568	\$27,568	0.0092	\$254
150		\$47,568	\$47,568	0.0089	\$423
NON-DISCOUNTED COST		\$97,175,254		TOTAL PRESENT WORTH	\$93,410,133

1. Discount rate column is a calculated annual multiplier where discount rate = $(1-e)^n$ where $e = 3.2\%$ and $n = \text{year} (1 - 150)$.

Table D-62 (Alternative 6), 216-Z-11 Ditch Representative Site, Calculation Sheet
 200-CW-5 U Pond/Z-Ditches Cooling Water Group, Hanford Site, Washington State.

Items	Quantity	Unit	Unit Cost				Extended Cost				Subtotal
			Subcontract	Material	Labor	Equipment	Subcontract	Material	Labor	Equipment	
Decontamination Pad Construction											
Timber Grates	0.402	mbf		\$577.00			\$0	\$232	\$0	\$0	\$232
Install 60 mil LLDPE	1,188	sf		\$0.44		\$0.26	\$0	\$523	\$0	\$309	\$832
3" SCH 80 PVC Pipe	5	lf		\$1.63			\$0	\$8	\$0	\$0	\$8
Sump Pump	1	ea		\$2,005.00			\$0	\$2,005	\$0	\$0	\$2,005
Sump Pump Hoses (50 lf)	1	ea		\$493.00			\$0	\$493	\$0	\$0	\$493
Sump Construction (2)	1	ls		\$74.04		\$1.68	\$0	\$74	\$0	\$2	\$76
Temporary Storage Tank (1,000 gal)	2	ea		\$1,674.00			\$0	\$3,348	\$0	\$0	\$3,348
4 Laborers, 5 days to Build/Remove	5	day			\$1,184.00		\$0	\$0	\$5,920	\$0	\$5,920
Subtotal Direct Cost							\$0.00	\$6,682.86	\$5,920.00	\$310.56	\$12,913

NOTE:

Cost of labor to run the decontamination pad provided under line item Decontamination Crew on Table D-71.

Table D-63. Alternatives 2, 3, and 4 Representative and Analogous Site Information, Hanford Site, Richland, Washington. (2 Pages)

Waste Site	Site Dimensions (ft)			Overburden Depth (ft)	Excavation Dimensions (ft)			Contaminated Volume ¹ (yd ³)	Excavated Volume ² (yd ³)	Overburden Soil Volume ³ (yd ³)	Area Ratio to Representative Site ⁴	Volume Ratio to Representative Site ⁵
	Length	Width	Thickness		Length	Width	Depth					
216-U-10 Pond	1,143	1,143	208	2	1,773	1773	210	10,064,496	17,305,470	7,240,974		
216-S-16P Pond	1,162	1,162	209	1	1,792	1792	210	10,451,889	17,739,198	7,287,309	1.034	1.032
GROUP												
216-S-17 Pond UPR-200-W-124	958	958	209	1	1,588	1588	210	7,104,173	13,375,864	6,271,691	0.702	0.739
216-T-4A Pond	1,800	600	209	1	2,430	1230	210	8,360,000	15,823,500	7,463,500	0.827	0.873
216-T-4B Pond	256	256	209.5	0.5	886	886	210	508,511	3,307,624	2,799,114	0.050	0.121
216-U-9 Ditch	3,500	6	209.3	0.7	4,130	636	210	162,789	10,296,533	10,133,744	0.016	0.306
216-U-11 Ditch	4,510	8	209	1	5,140	638	210	279,286	12,893,222	12,613,936	0.028	0.386
216-S-5 Crib	210	210	209	1	840	840	210	341,367	2,915,500	2,574,133	0.034	0.101
216-S-6 Crib	210	210	209	1	840	840	210	341,367	2,915,500	2,574,133	0.034	0.101
GROUP												
216-A-6 Crib UPR-200-E-19 UPR-200-E-21 UPR-200-E-29	100	100	209	1	730	730	210	77,407	2,111,278	2,033,870	0.008	0.065
216-A-30 Crib	1,400	10	209	1	2,030	640	210	108,370	5,106,889	4,998,519	0.011	0.153
216-S-25 Crib	575	575	209	1	1,205	1205	210	2,559,282	6,932,528	4,373,245	0.253	0.327
216-A-37-2 Crib	1,400	10	209	1	2,030	640	210	108,370	5,106,889	4,998,519	0.011	0.153
216-B-55 Crib	750	10	209	1	1,380	640	210	58,056	3,463,833	3,405,778	0.006	0.103
216-S-172 Control Structure ⁸	14	7	14	1	59	52	15	51	879	829	0.0001	0.009
2904-S-160 Control Structure ⁸	10	10	14	1	55	55	15	52	868	816	0.0001	0.009
2904-S-170 Control Structure ⁸	16	5	14	1	61	50	15	41	869	828	0.0001	0.008
2904-S-171 Control Structure ⁸	13	9	14	1	58	54	15	61	903	842	0.0001	0.009
207-S Retention Basin ⁸	130	130	14.5	0.5	175	175	15	9,076	13,201	4,125	0.013	0.678
216-B-64 Retention Basin ⁸	167	42	14	1	212	87	15	3,637	7,072	3,435	0.005	0.282
200-E-113 Process Sewer ⁸	1,765	1.33	9.5	1	1,797	33	10.5	826	11,987	11,161	0.002	0.126
216-U-14 Ditch	5,680	4	9	6	5,725	49	15	7,573	84,235	76,661		
216-S-16D Ditch	1,700	4	13	2	1,745	49	15	3,274	25,640	22,366	0.299	0.368
216-T-1 Ditch	1,825	3	8	7	1,870	48	15	1,622	26,454	24,832	0.241	0.264
GROUP												
216-T-4-1D Ditch 216-T-4-2 Ditch	2,600	8	12	3	2,645	53	15	9,244	44,718	35,474	0.915	0.876
216-W-LWC Crib	300	266	2	13	345	311	15	5,911	51,971	46,060	3.512	0.699

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Table D-63. Alternatives 2, 3, and 4 Representative and Analogous Site Information, Hanford Site, Richland, Washington. (2 Pages)

Waste Site	Site Dimensions (ft)			Overburden Depth (ft)	Excavation Dimensions (ft)			Contaminated Volume ¹ (yd ³)	Excavated Volume ² (yd ³)	Overburden Soil Volume ³ (yd ³)	Area Ratio to Representative Site ⁴	Volume Ratio to Representative Site ⁵
	Length	Width	Thickness		Length	Width	Depth					
GROUP 207-U Retention Basin UPR-200-W-111 UPR-200-W-112	296	123	11.5	3.5	341	168	15	15,507	26,027	10,520	1.602	1.178
207-T Retention Basin	246	123	13.5	1.5	291	168	15	15,129	21,985	6,856	1.332	1.129
216-T-12 Trench	15	10	9	1	45	40	10	50	361	311	0.007	0.005
200-W-84 Process Sewer	2,625	1.5	2.5	2	2,639	15	4.5	365	3,627	3,262	0.173	0.046
200-W-88 Process Sewer	10,330	2	6.5	3	10,359	31	9.5	4,974	60,130	55,156	0.909	0.685
200-W-102 Process Sewer	2,900	2	4	10	2,942	44	14	859	35,064	34,205	0.255	0.265
216-Z-11 Ditch 216-Z-1D Ditch 216-Z-19 Ditch 216-Z-20 Crib UPR-200-W-110	2,765	24	13	2	2,810	69	15	35,100	96,975	61,875		
	1,635	4	13	2	1,680	49	15					
207-Z Retention Basin ⁶	50	40	13	2	95	85	15	963	2,799	1,836	2.222	0.080
216-A-25 Pond	3,800	700	7	8	3,845	745	15	⁽⁹⁾	1,534,590	844,961		
207-A North Retention Basin	165	10	14	1	210	55	15	856	3,667	2,811	0.001	0.0018
216-T-26 Crib	30	30	207	18	705	705	225	⁽⁹⁾	2,074,688	2,067,788		
216-T-36 Crib	160	10	223	2	835	685	225	13,215	2,389,896	2,376,681	1.778	1.534
200-W-79 Pipeline ⁸	738	0.3	11	1	774	37	12	90	6,413	6,323	0.246	0.044

Total Volume of Soil to ERDF ⁽⁷⁾ 40,651,139

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Table D-64. Alternative 5 Representative and Analogous Site Information, Hanford Site, Richland, Washington. (2 Pages)

Waste Site	Site Dimensions (ft)			Overburden Depth (ft)	Excavation Dimensions (ft)			Contaminated Volume ¹ (yd ³)	Excavated Volume ² (yd ³)	Overburden Soil Volume ³ (yd ³)	Area Ratio to Representative Site ⁴	Volume Ratio to Representative Site ⁵	Average Ratio ⁶
	Length	Width	Thickness		Length	Width	Depth						
216-U-10 Pond	1,143	1,143	13	2	1,188	1188	15	629,031	754,943	125,912			
216-S-16P Pond	1,162	1,162	14	1	1,207	1207	15	700,127	779,748	79,622	1.034	1.073	1.054
GROUP 216-S-17 Pond UPR-200-W-124	958	958	14	1	1,003	1003	15	475,878	534,381	58,504	0.702	0.732	0.717
216-T-4A Pond	1,800	600	14	1	1,845	645	15	560,000	630,563	70,563	0.827	0.863	0.845
216-T-4B Pond	256	256	14.5	0.5	301	301	15	35,195	43,371	8,176	0.050	0.057	0.054
216-U-9 Ditch	3,500	6	14.3	0.7	3,545	51	15	11,122	56,054	44,932	0.016	0.046	0.031
216-U-11 Ditch	4,510	8	14	1	4,555	53	15	18,708	77,082	58,374	0.028	0.066	0.047
216-S-5 Crib	210	210	14	1	255	255	15	22,867	30,313	7,446	0.034	0.038	0.036
216-S-6 Crib	210	210	14	1	255	255	15	22,867	30,313	7,446	0.034	0.038	0.036
GROUP 216-A-6 Crib UPR-200-E-19 UPR-200-E-21 UPR-200-E-29	100	100	14	1	145	145	15	5,185	8,618	3,433	0.008	0.010	0.009
216-A-30 Crib	1,400	10	14	1	1,445	55	15	7,259	25,965	18,706	0.011	0.023	0.017
216-S-25 Crib	575	575	14	1	620	620	15	171,435	198,618	27,183	0.253	0.268	0.261
216-A-37-2 Crib	1,400	10	14	1	1,445	55	15	7,259	25,965	18,706	0.011	0.023	0.017
216-B-55 Crib	750	10	14	1	795	55	15	3,889	14,229	10,340	0.006	0.013	0.010
216-S-172 Control Structure	14	7	14	1	59	52	15	NA	NA	NA	NA	NA	NA
2904-S-160 Control Structure	10	10	14	1	55	55	15	NA	NA	NA	NA	NA	NA
2904-S-170 Control Structure	16	5	14	1	61	50	15	NA	NA	NA	NA	NA	NA
2904-S-171 Control Structure	13	9	14	1	58	54	15	NA	NA	NA	NA	NA	NA
207-S Retention Basin	130	130	14.5	0.5	175	175	15	NA	NA	NA	NA	NA	NA
216-B-64 Retention Basin	167	42	14	1	212	87	15	NA	NA	NA	NA	NA	NA
200-E-113 Process Sewer	1,765	1.33	9.5	1	1,797	33	10.5	NA	NA	NA	NA	NA	NA
216-T-26 Crib	30	30	12	18	120	120	30	6	8,500	8,100			
216-T-36 Crib	160	10	28	2	250	100	30	1,659	14,778	13,119	1.778	2.943	2.361
200-W-79 Pipeline	738	0.3	11	1	774	37	12	NA	NA	NA	NA	NA	NA

Total Volume of Soil to ERDF	2,672,481
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SPECIFIC NOTES: 1 Contaminated Volume = (Site Dimensions) Length x Width x Thickness. 2 The excavated volume for all sites were calculated as trapezoids: Volume = average of the Site Dimensions (Length x Width) and the Excavation Dimensions (Length x Width) times the depth of excavation. 3 Overburden Soil Volume = Excavated Volume - Contaminated Volume. 4 Area Ratio to Representative Site = Ratio between the analogous Site Dimensions (Length x Width) by representative Site Dimensions (Length x Width). 5 Volume Ratio to Representative Site = Average of ratios between analogous Contaminated Volume by representative Contaminated Volume and analogous Excavated Volume by representative Excavated Volume. 6 Average Ratio = Average of the area ratio to representative site and volume ratio to representative site. 7 Volumes not included because impacts were reported in a previous FS.

Table D-65. Net Present Worth Cost Estimates. (4 Pages)

WASTE SITE/GROUP	ALTERNATIVE 1: No Action	ALTERNATIVE 2: Maintain Existing Soil Cover, Institutional Controls, and Monitored Natural Attenuation	ALTERNATIVE 3: Remove and Dispose	ALTERNATIVE 4: Capping	ALTERNATIVE 5: Partial Remove and Dispose and Capping	ALTERNATIVE 6: Subsurface Planar Vitrification
REPRESENTATIVE SITE						
216-U-10 Pond (Non-discounted cost)	-	\$13,764,988 (\$66,591,573)	\$1,811,600,893 (NA)	\$46,064,132 (\$107,399,510)	\$130,523,118 (\$185,157,006)	-
Analogous Sites						
216-S-16P Pond (Non-discounted cost)	-	\$14,157,993 (\$68,494,873)	\$1,869,572,122 (NA)	\$47,628,943 (\$111,046,528)	\$137,569,191 (\$195,148,234)	-
Group Consisting of 216-S-17 Pond and UPR-200-W-124 (Non-discounted cost)	-	\$12,146,299 (\$58,691,546)	\$1,338,773,060 (NA)	\$32,389,307 (\$75,568,744)	\$93,636,757 (\$132,929,847)	-
216-T-4A Pond (Non-discounted cost)	-	\$11,532,468 (\$55,796,761)	\$1,581,527,580 (NA)	\$38,090,644 (\$88,804,752)	\$110,286,916 (\$156,440,611)	-
216-T-4B Pond (Non-discounted cost)	-	\$1,391,033 (\$6,682,365)	\$219,203,708 (NA)	\$2,330,113 (\$5,459,664)	\$7,074,993 (\$10,087,630)	-
216-U-9 Ditch ³ (Non-discounted cost)	-	\$914,986 (\$4,358,112)	\$554,349,873 (NA)	\$776,664 (\$1,929,942)	\$4,085,250 (\$5,869,979)	-
216-U-11 Ditch (Non-discounted cost)	-	\$1,043,048 (\$4,979,938)	\$699,277,945 (NA)	\$1,328,950 (\$3,137,701)	\$6,172,975 (\$8,830,342)	-
216-S-5 Crib (Non-discounted cost)	-	\$1,095,797 (\$5,235,401)	\$182,971,690 (NA)	\$1,605,093 (\$3,781,292)	\$4,737,664 (\$6,795,092)	-
216-S-6 Crib (Non-discounted cost)	-	\$1,095,797 (\$5,235,401)	\$182,971,690 (NA)	\$1,605,093 (\$3,781,292)	\$4,737,664 (\$6,795,092)	-
Group Consisting of 216-A-6 Crib, UPR-200-E-19, UPR-200-E-21, and UPR-200-E-29 ^{2,4} (Non-discounted cost)	-	\$821,062 (\$3,864,340)	\$117,754,058 (NA)	\$728,853 (\$2,019,459)	\$1,241,482 (\$2,307,008)	-
216-A-30 Crib ² (Non-discounted cost)	-	\$814,947 (\$3,912,421)	\$277,174,937 (NA)	\$677,382 (\$1,847,886)	\$2,233,873 (\$3,197,604)	-
216-S-25 Crib (Non-discounted cost)	-	\$4,751,780 (\$22,941,120)	\$592,393,492 (NA)	\$11,684,316 (\$27,272,379)	\$34,096,302 (\$48,425,207)	-
216-A-37-2 Crib ² (Non-discounted cost)	-	\$814,947 \$3,807,985	\$277,174,937 (NA)	\$677,382 (\$1,847,886)	\$2,233,873 (\$3,197,604)	-
216-B-55 Crib ^{2,4} (Non-discounted cost)	-	\$770,930 (\$3,692,489)	\$186,594,892 (NA)	\$681,858 (\$1,862,805)	\$1,324,969 (\$2,150,354)	-
216-S-172 Control Structure ^{1,2,3}	-	\$745,785	\$238,172	\$701,999	-	-

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Table D-65. Net Present Worth Cost Estimates. (4 Pages)

WASTE SITE/GROUP	ALTERNATIVE 1: No Action	ALTERNATIVE 2: Maintain Existing Soil Cover, Institutional Controls, and Monitored Natural Attenuation	ALTERNATIVE 3: Remove and Dispose	ALTERNATIVE 4: Capping	ALTERNATIVE 5: Partial Remove and Dispose and Capping	ALTERNATIVE 6: Subsurface Planar Vitrification
(Non-discounted cost)		(\$3,540,310)	(NA)	(\$1,929,942)		
2904-S-160 Control Structure ^{1,2,5}	-	\$745,785	\$238,172	\$701,999	-	-
(Non-discounted cost)		(\$3,540,310)	(NA)	(\$1,929,942)		
2904-S-170 Control Structure ^{1,2,5}	-	\$729,501	\$238,172	\$685,715	-	-
(Non-discounted cost)		(\$3,486,029)	(NA)	(\$1,875,661)		
2904-S-171 Control Structure ^{1,2,5}	-	\$745,785	\$238,172	\$701,999	-	-
(Non-discounted cost)		(\$3,540,310)	(NA)	(\$1,929,942)		
207-S Retention Basin ^{2,5}	-	\$877,325	\$2,510,271	\$701,999	-	-
(Non-discounted cost)		(\$4,177,353)	(NA)	(\$1,929,942)		
216-B-64 Retention Basin ^{2,5}	-	\$768,953	\$1,044,095	\$681,858	-	-
(Non-discounted cost)		(\$3,682,917)	(NA)	(\$1,862,805)		
200-E-113 Process Sewer ^{2,5}	-	\$725,706	\$466,511	\$677,382	-	-
(Non-discounted cost)		(\$3,480,232)	(NA)	(\$1,847,886)		
REPRESENTATIVE SITE						
216-U-14 Ditch	-	\$918,477	\$3,702,465	\$17,497,463	-	-
(Non-discounted cost)		(\$4,376,646)	(NA)	(\$40,528,170)		
Analogous Sites						
216-S-16D Ditch	-	\$788,993	\$1,362,507	\$5,259,979	-	-
(Non-discounted cost)		(\$3,749,565)	(NA)	(\$12,212,049)		
216-T-1 Ditch	-	\$738,274	\$977,451	\$4,230,199	-	-
(Non-discounted cost)		(\$3,530,001)	(NA)	(\$9,811,657)		
Group Consisting of 216-T-4-1D Ditch and 216-T-4-2 Ditch	-	\$881,555	\$3,243,359	\$16,012,213	-	-
(Non-discounted cost)		(\$4,199,937)	(NA)	(\$37,090,059)		
216-W-LWC Crib	-	\$1,510,258	\$2,588,023	\$61,332,638	-	-
(Non-discounted cost)		\$7,115,215	(NA)	(\$141,940,091)		
Group Consisting of 207-U Retention Basin, UPR-200-W-111, and UPR-200-W-112	-	\$1,072,022	\$4,361,504	\$28,035,458	-	-
(Non-discounted cost)		(\$5,076,826)	(NA)	(\$64,941,205)		
207-T Retention Basin	-	\$951,935	\$4,180,083	\$23,275,983	-	-
(Non-discounted cost)		(\$4,564,747)	(NA)	(\$53,881,397)		
216-T-12 Trench ^{1,2}	-	\$724,999	\$238,172	\$681,163	-	-
(Non-discounted cost)		(\$3,471,102)	(NA)	(\$1,860,490)		
200-W-84 Process Sewer ¹	-	\$741,594	\$238,172	\$3,049,012	-	-

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Table D-65. Net Present Worth Cost Estimates. (4 Pages)

WASTE SITE/GROUP	ALTERNATIVE 1: No Action	ALTERNATIVE 2: Maintain Existing Soil Cover, Institutional Controls, and Monitored Natural Attenuation	ALTERNATIVE 3: Remove and Dispose	ALTERNATIVE 4: Capping	ALTERNATIVE 5: Partial Remove and Dispose and Capping	ALTERNATIVE 6: Subsurface Planar Vitrification
(Non-discounted cost)		(\$3,537,168)	(NA)	(\$7,084,546)		
200-W-88 Process Sewer (Non-discounted cost)	-	\$862,058 (\$4,134,870)	\$2,536,189 (NA)	\$15,888,024 (\$36,782,873)	-	-
200-W-102 Process Sewer (Non-discounted cost)	-	\$738,426 (\$3,530,734)	\$981,153 (NA)	\$4,474,599 (\$10,377,171)	-	-
REPRESENTATIVE SITE						
Group Consisting of 216-Z-11 Ditch, 216-Z-1D Ditch, 216-Z-19 Ditch, 216-Z-20 Crib, and UPR-200-W-110 (Non-discounted cost)	-	\$1,593,470 (\$7,469,939)	\$77,501,147 (NA)	\$42,237,150 (\$68,690,348)	-	\$93,566,783 (\$97,697,429)
Analogous Sites						
207-Z Retention Basin ⁶ (Non-discounted cost)	-	\$741,169 (\$3,531,471)	\$296,197 (NA)	\$3,761,199 (\$10,944,391)	-	-
REPRESENTATIVE SITE						
216-A-25 Pond (Non-discounted cost)	-	(7)	(7)	(7)	-	-
Analogous Sites						
207-A North Retention Basin ² (Non-discounted cost)	-	\$748,195 (\$3,551,982)	\$246,584 (NA)	\$701,999 (\$1,929,942)	-	-
REPRESENTATIVE SITE						
216-T-26 Crib (Non-discounted cost)	-	(7)	(7)	(7)	(7)	-
Analogous Sites						
216-T-36 Crib (Non-discounted cost)	-	\$727,359 (\$3,482,530)	\$37,736,178 (NA)	\$3,004,013 (\$8,738,738)	\$3,455,374 (\$10,764,938)	-
200-W-79 Pipeline ^{1,2,5} (Non-discounted cost)	-	\$728,571 (\$3,483,008)	\$238,172 (NA)	\$684,735 (\$1,872,396)	-	-

SPECIFIC NOTES:

- Costs for Alternative 3 is based on the minimum cost calculation. The minimum cost is the lowest cost anticipated to complete the alternatives. For Alternative 3, the minimum cost is \$238,172.
- Costs for Alternative 4 (discounted and non-discounted costs) are based on the minimum cost calculations. The minimum cost is the lowest cost anticipated to complete the alternatives. For Alternative 4, the minimum discounted and non-discounted costs are \$661,717 and \$1,795,668 respectively.
- Costs for Alternative 4 (non-discounted cost) is based on the minimum cost calculation. The minimum cost is the lowest cost anticipated to complete the alternatives. For Alternative 4, the minimum non-discounted cost is \$1,795,668.

Table D-65. Net Present Worth Cost Estimates. (4 Pages)

WASTE SITE/GROUP	ALTERNATIVE 1: No Action	ALTERNATIVE 2: Maintain Existing Soil Cover, Institutional Controls, and Monitored Natural Attenuation	ALTERNATIVE 3: Remove and Dispose	ALTERNATIVE 4: Capping	ALTERNATIVE 5: Partial Remove and Dispose and Capping	ALTERNATIVE 6: Subsurface Planar Vitrification
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- 4 Costs for Alternative 5 (non-discounted cost) is based on the minimum cost calculation. The minimum cost is the lowest cost anticipated to complete the alternatives. For Alternative 5, the minimum non-discounted cost is \$2,083,217.
- 5 Excavation depths are substantially less than the representative site. Therefore, the costs for Alternative 3 are a ratio of the 216-U-14 representative site.
- 6 Site does not contain TRU waste like its representative site. Therefore, the cost for Alternative 4 is a ratio of the 216-T-26 representative site and the costs for Alternative 3 is a ratio of the 216-U-14 representative site.
- 7 Cost not included because impacts were reported in previous FS.

GENERAL NOTES:

Cost details are provided in Appendix D.

Net present worth is taken over the active control period.

The net present worth for the analogous sites for Alternatives 3, 4, and 5 was calculated from the representative site net present worth (minus groundwater monitoring costs) based on either the area or volume of the site. This was done using either the area ratio to representative site (Alternative 4), the volume ratio to representative site (Alternative 3), or an average of the area and volume ratio to representative site (Alternative 5). An explanation of area and volume ratios and their values can be found in Table D-63. Alternative 5 area and volume ratios, along with the average ratio, can be found in Table D-64. Both tables are located in Appendix D. Groundwater monitoring costs for each site can be found in Section D3.1.4. For example:

Representative Site 216-U-10 Pond
 Alternative 3 = \$1,811,600,893
 Alternative 4 = \$46,023,850
 Alternative 5 = \$130,482,836

An Analogous site to 216-U-10 is 216-S-16P whose costs are calculated as follows:
 Area Ratio (Table D-63) = 1.034
 Volume Ratio (Table D-63) = 1.032
 Average Ratio for Alternative 5 (Table D-64) = 1.054

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APPENDIX E

RISK ASSESSMENT FOR INADVERTENT INTRUDER SCENARIO

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TERMS

bgs	below ground surface
HAB	Hanford Advisory Board
PRG	preliminary remediation goal
RESRAD	RESidual RADioactivity (dose model)

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APPENDIX E

RISK ASSESSMENT FOR INADVERTENT INTRUDER SCENARIO

E1.0 INTRODUCTION

The Hanford Advisory Board (HAB), in Advice #132 (HAB 132), requested that the Tri-Party Parties (U.S. Department of Energy, U.S. Environmental Protection Agency, and Washington State Department of Ecology) evaluate the dose to potential intruders when considering former waste sites for closure. In its response to the HAB, the Tri-Party Parties committed to evaluating doses to the intruder as well as a number of other exposure scenarios (TPA 2002).

This appendix presents an analysis of an intruder scenario for determining excavation depth should excavation be selected. The following waste sites are analyzed:

- 216-U-10 Pond
- 216-U-14 Ditch
- 216-Z-11 Ditch
- 216-A-25 Gable Mountain Pond
- 216-T-26 Crib.

The 216-Z-11 Ditch comprises three ditches: 216-Z-11, 216-Z-1-D, and 216-Z-19. Previously, these ditches were analyzed as one entity. Because most of the contamination resides in the 216-Z-1-D and 216-Z-19 Ditches, this analysis addresses the three ditches separately to avoid drawing conclusions for all three ditches based on results from just one.

The reasonably anticipated future land use for the 200 Areas is continued industrial activities based on DOE/EIS-0222-F, *Final Hanford Comprehensive Land Use Plan Environmental Impact Statement* and 64 FR 61615, "Record of Decision: Hanford Comprehensive Land-Use Plan Environmental Impact Statement (HCP EIS)." For locations within the industrial area, the U.S. Department of Energy dose limits for the protection of workers and the affected public will be in effect for as long as facility management operations continue. However, after a period of 50 years, it is assumed that all operations will have ceased but that public entry to the site will be restricted for an additional 100 years by enforcement of institutional controls. Evaluation of a 500-year period also was conducted.

The inadvertent intruder scenario is based on the possibility that, after the 150 years or the 500 years, an individual unwittingly (through human error or loss of knowledge concerning the location of contaminants) engages in an activity that results in contact with wastes left in place. The goal of remediation is to achieve the 10^{-4} to 10^{-6} risk range, using a dose of 15 mrem/yr above background as an operational guideline to achieve this goal. Demonstration that the 10^{-4} to 10^{-6} residual risk-range goal has been achieved will be accomplished through final verification sampling during closeout of individual sites. Therefore, the evaluation in this risk assessment focuses on the 15 mrem/yr standard.

The following three intruder scenarios have been proposed for evaluation and are discussed in more detail in subsequent paragraphs.

- Future construction trench worker
- Future well driller
- Future rural resident.

E1.1 FUTURE CONSTRUCTION TRENCH WORKER INTRUDER SCENARIO

The future construction trench worker would encounter contaminants by inadvertently excavating a utilities trench (or other construction activity such as the excavation of a basement or building foundation). The worker is assumed exposed for 8 hours a day for 5 days. The dose to the worker is the sum of the contributions from inhaling resuspended dust, inadvertently ingesting soil, and receiving direct exposure at the center of a 200 m² (2,150 ft²) area of contaminated soil for 40 hours.

E1.2 FUTURE WELL DRILLER INTRUDER SCENARIO

This exposure scenario involves inadvertently drilling a well at a waste site. The drill cuttings (i.e., uncontaminated and contaminated soil) are assumed to have been spread over the work area near the well. Based on the evaluations for DOE/ORP-2000-24, *Hanford Immobilized Low-Activity Waste Performance Assessment: 2001 Version* and BHI-00169, *Environmental Restoration Disposal Facility Performance Assessment*, a 0.3 m (1-ft) diameter well for this evaluation is assumed. Although consistent with the diameters used in Hanford Site performance assessments, this diameter is larger than the range of well diameters commonly found in local communities (10 to 25 cm [4 to 10 in.]). Use of this well diameter may overestimate the dose associated with this exposure scenario. The area on which the driller spreads the cuttings is assumed to be 200 m² (a size historically used in Hanford Site performance assessments).

In the well driller intruder scenario, the soil mixing depth is assumed to be 15 cm (6 in.), a depth used in other onsite performance assessments. The worker at the well drilling site is assumed exposed for 8 hours a day for 5 days. The dose to the worker is the sum of the contributions from inhaling resuspended dust, inadvertently ingesting soil, and receiving direct exposure at the center of the 200 m² (2,150 ft²) slab for 40 hours.

E1.3 FUTURE RURAL RESIDENTIAL INTRUDER SCENARIO

This scenario assumes that a receptor is residing within the area and has planted a garden using the drill cuttings taken from a well drilled through the waste site, as discussed above in the well driller scenario. The dose to the resident is the sum of the contributions from direct exposure to the radiation field in the garden, inhalation of resuspended dust, ingestion of soil at the same rates as the future well driller, and consumption of garden produce grown in the contaminated

soil. Consumption of groundwater is not included in this evaluation because groundwater in this area currently is under remediation and is not available for use. This scenario is consistent with other inadvertent intruder evaluations conducted within the Central Plateau.

The resident is assumed to spread the waste over a garden 200 m² (2,150 ft²) in area and to a depth of 15 cm (6 in). The garden area was taken from another risk assessment (DOE/ORP-2000-24) and is based on an area large enough to supply a significant portion of a person's vegetable and fruit diet, yet small enough to produce a higher (more conservative) estimation of dose. The resident is assumed to spend 20 percent of the time in the garden, 60 percent of the time indoors exposed to dust from the garden, and 20 percent of the time off site.

Of the three scenarios proposed for evaluation, the future rural resident is considered the worst-case scenario, primarily because of the larger exposure time. Therefore, this scenario is the only one analyzed in the remainder of this appendix.

E2.0 CONCEPTUAL SITE MODEL

The data on contamination in the waste site are partitioned into 1.5 m (5-ft) increments of depth, with all contaminated increments being assigned a concentration equal to the highest concentration measured within any increment. The contamination concentration then is reduced based on decay for 150 years and for 500 years assuming no transport of the contaminants during those years. After 150 years or 500 years, as the well drilling intersects the incremental layers, the total amount of radioactivity in the well cuttings is assumed to be thoroughly mixed with surface soil such that the contamination in the garden is of uniform concentration. The specifications on the garden are provided in Table E-1.

The contaminant data for the analysis are taken from the following locations:

- 216-U-10 Pond, 216-U-14 Ditch, and 216-Z-11 Ditch: Appendix A of DOE/RL-2003-11, *Remedial Investigation Report for the 200-CW-5 U Pond/Z Ditches Cooling Water Group, the 200-CW-2 S Pond and Ditches Cooling Water Group, the 200-CW-4 T Pond and Ditches Cooling Water Group, and the 200-SC-1 Steam Condensate Group Operable Units*
- 216-A-25 Gable Mountain Pond: Appendix A of DOE/RL-2000-35, *200-CW-1 Operable Unit Remedial Investigation Report*
- 216-T-26 Crib: Appendix C of DOE/RL-2002-42, *Remedial Investigation Report for the 200-TW-1 and 200-TW-2 Operable Units (Includes the 200-PW-5 Operable Unit)*.

The following screening occurred on the undecayed (current) data.

- Radionuclides with half-lives less than 15 years (resulting in 10 half-lives at the end of institutional control) were not included because each radionuclide would decay to insignificant levels.
- Current concentrations less than 1 pCi/g were not included.
- Combined Pu-239/Pu-240 values were evaluated as if totally Pu-239 because Pu-239 is the more likely contaminant and its health risk is slightly greater than that for Pu-240.
- Gross alpha and gross beta measurements were not included.
- Values less than the detection limit were not included.
- Total strontium was evaluated as Sr-90.
- Radionuclides commonly found in the earth's crust that showed relatively uniform concentrations to the greatest depth sampled (e.g., K-40) were assumed to be at background concentrations and thus not included.

The resulting soil column concentration values used for the rural residential intruder analysis are presented in Tables E-2 through E-8 for the seven waste sites evaluated. These concentrations are current concentrations, not concentrations at the end of institutional control. The tables are in 5-ft increments from ground surface to the estimated bottom of the contaminated zone. The exposure-point concentration for the rural residential intruder is based on dilution of the drill cuttings from being spread over the garden and mixed with soil as described previously.

Figure E-1 represents the conceptual site model for the exposure scenario.

E3.0 RISK ASSESSMENT METHODOLOGY

Residential intruder health risk resulting from radioactive contaminants was evaluated using the RESidual RADioactivity (RESRAD) computer model (ANL 2002, *RESRAD for Windows*) as described in Section 2.7 of this feasibility study. The baseline input file used was the same as that used for the industrial, direct-contact exposure scenario without cover. The input parameters used for the industrial exposure scenario are listed in Appendix C, Table C-9 of this feasibility study. The principal changes to the inputs for the intruder analysis were the diluted concentrations in the garden and the area of the contaminated zone, as previously discussed in this appendix. The intruder scenario includes the plant ingestion exposure pathway, which the industrial scenario did not use. Therefore, the exposure pathways used for the intruder scenario include external gamma, inhalation, plant ingestion, and soil ingestion.

An iterative process was used to determine if excavation of the contaminated zone is required to protect the residential intruder. First, the analysis included all the 1.5 m (5-ft) incremental layers (i.e., no excavation). Next, the uppermost 1.5 m (5-ft) layer was removed from the analysis as if

the contaminated soil had been removed. Subsequent layers were removed one at a time until all the contamination was gone. The dose values calculated for each iteration allow generation of a table of intruder dose versus excavation depth. Examination of the table suggests at which excavation depth the 15 mrem/yr standard can be achieved.

Finally, RESRAD was used to determine the individual radionuclide preliminary remediation goals (PRG) for the residential intruder scenario, assuming 150 years of decay. These PRGs are the average soil column concentrations that would result in a 15 mrem/yr dose to the intruder. Because radionuclide impacts to human health are additive, these individual radionuclide PRGs only are applicable when the radionuclide is the only one present. For multiple radionuclides, the sum of the fractions of the individual radionuclide soil concentration divided by the individual radionuclide PRG must be compared to the number "1," which represents the cumulative dose benchmark of 15 mrem/yr.

E4.0 ANALYTICAL RESULTS AND CONCLUSIONS

Table E-9 presents the 150-year dose to the intruder by excavation depth for each of the seven waste sites. Table E-10 presents the 500-year doses. The dose decreases as more soil is excavated. Individual radionuclide PRGs for the intruder scenario are presented in Table E-11 for each waste site. As an illustration of the sum of the fractions rule, Table E-12 presents the sum of the fractions for each waste site assuming no excavation. The soil concentrations used are the average soil concentrations in the contaminated zone, not those of any individual 5-ft increment. Similarly, the PRGs were calculated based on an average concentration in the soil column.

Following is a summary for each waste site:

- 216-U-10 Pond – The dose to the intruder without any excavation is 3.5 mrem/yr with 150 years of radioactive decay and 0.12 mrem/yr with 500 years of decay. These values are less than the 15 mrem/yr standard; therefore, no excavation is indicated. The dose is primarily from Cs-137 at 150 years and Pu-239 and U-239 at 500 years. The contamination primarily is located 0 to 3.1 m (0 to 10 ft) below ground surface (bgs) at concentrations less than the PRGs. A larger area of contamination exists near 41.2 m (135 ft), but it also is less than the PRGs.
- 216-U-14 Ditch – The dose to the intruder without any excavation is 1.8 mrem/yr with 150 years of radioactive decay and 0.0014 mrem/yr with 500 years of decay. These values are less than the 15 mrem/yr standard, so no excavation is indicated. The dose primarily is from Cs-137 at 150 years and from Am-241, Cs-137, and Pu-239 at 500 years. The contamination primarily is located 0 to 6.2 m (0 to 20 ft) bgs at concentrations less than the PRGs.
- 216-Z-11 Ditch – The dose to the intruder without any excavation is 25 mrem/yr with 150 years of radioactive decay and 24 mrem/yr with 500 years of decay. The dose primarily is from Pu-239, which is located 0 to 6.2 m (0 to 20 ft) bgs at concentrations

greater than its individual PRG. This contamination will not decay to less than the PRG in more than 10,000 years.

- 216-Z-1-D Ditch – The dose to the intruder without any excavation is 3,300 mrem/yr with 150 years of radioactive decay and 2,000 mrem/yr with 500 years of decay. The dose primarily is from Am-241, for which the majority of the contamination is located from 5 to 15 ft bgs at concentrations significantly greater than the PRG. There also is a significant contribution from Pu-239, which is collocated with the Am-241 and Ra-226, which is located 3.1 to 4.6 m (10 to 15 ft) bgs. This contamination will not decay to less than PRGs in more than 10,000 years.
- 216-Z-19 Ditch – The dose to the intruder without any excavation is 5,500 mrem/yr with 150 years of radioactive decay and 5,400 mrem/yr with 500 years of decay. The dose primarily is from Pu-239, which is located from 0 to 4.6 m (0 to 15 ft) bgs at concentrations greater than the PRG. There is a less significant contribution from Am-241, which is collocated with the Pu-239. This contamination will not decay to less than the PRGs in more than 10,000 years.
- 216-A-25 Gable Mountain Pond – The dose to the intruder without any excavation is 7.4 mrem/yr with 150 years of radioactive decay and 0.017 mrem/yr with 500 years of decay. These values are less than the 15 mrem/yr standard, so no excavation is indicated. The dose primarily is from Cs-137 at 150 years and Th-232 at 500 years. The contamination is located 0 to 7.6 m (0 to 25 ft) bgs at concentrations less than the PRGs.
- 216-T-26 Crib – The dose to the intruder without any excavation is 35 mrem/yr with 150 years of radioactive decay and 0.97 mrem/yr with 500 years of decay. The dose primarily is from Cs-137 at 150 years and from Pu-239 at 500 years. The contamination primarily is located from 4.6 to 12.2 m (15 to 40 ft) bgs with Cs-137 exceeding its individual PRG. This contamination will decay to less than the 15 mrem/yr standard in approximately 190 years.

As summarized in Table E-13, four of the waste sites require excavation to achieve the 15 mrem/yr dose standard for the intruder scenario. With incremental removal of soil (with depth referenced from ground surface), these waste sites exhibit differing decreases in risk at various depths (dependent on radionuclide concentration and depth distribution).

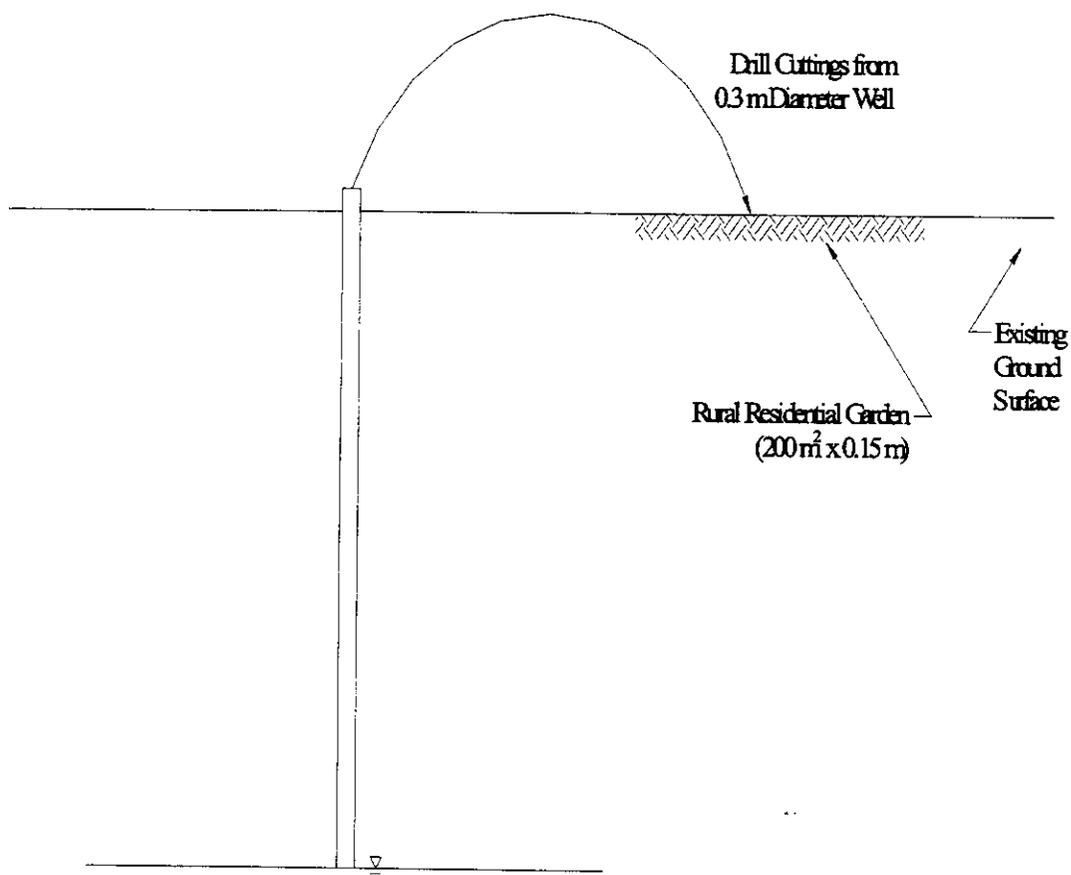
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- HAB 132, 2002, "Exposure Scenarios Task Force on the 200 Area," (letter to K. Klein, H. Boston, J. Iani, and T. Fitzsimmons from T. Martin), Hanford Advisory Board Consensus Advice #132, Richland, Washington, June 7.
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Figure E-1. Conceptual Site Model for the Rural Residential Intruder Scenario.



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Table E-1. Residential Intruder Garden Specifications.

Parameter	Value
Diameter of borehole (feet)	1
Area of borehole (square feet)	0.785
Volume of cuttings in each increment (cubic feet)	3.93
Density of garden soil (grams per cubic centimeter)	1.5
(pounds per cubic foot)	93.6
Garden area (square feet)	2,153
Garden volume (cubic feet)	1,077
Garden soil mass (pounds)	100,760

Table E-2. 216-U-10 Pond Current Maximum Concentrations by Depth Below Ground Surface (picoCuries per gram).^a (2 Pages)

Depth (ft)	Am-241	Tc-99	Cs-137	Pu-238	Pu-239 ^b	Se-79	Sr-90 ^c	Th-232	U-233	U-234	U-235	U-238
0	44	8.8	3,994	22	75	20	157			33	1.6	88
5	44	8.8	3,994	22	75	20	157	2.6	85	33	1.6	88
10						20	157					
15						20	157					
20							157					
25							157					
30												
35												
40												
45												
50												
55												
60												
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70												
75												
80												
85												
90												
95												
100												
105												
110												
115												
120												
125												

Table E-2. 216-U-10 Pond Current Maximum Concentrations by Depth Below Ground Surface (picoCuries per gram).^a (2 Pages)

Depth (ft)	Am-241	Tc-99	Cs-137	Pu-238	Pu-239 ^b	Se-79	Sr-90 ^c	Th-232	U-233	U-234	U-235	U-238
130												
135			8,313		15	46				56	2	53

Source: DOE/RL-2003-11, *Remedial Investigation Report for the 200-CW-5 U Pond/Z Ditches Cooling Water Group, the 200-CW-2 S Pond and Ditches Cooling Water Group, the 200-CW-4 T Pond and Ditches Cooling Water Group, and the 200-SC-1 Steam Condensate Group Operable Units.*

^aBlank cells represent zero or negligible results.

^bPu-239/Pu-240 values represented as totally Pu-239.

^cTotal strontium values represented as totally Sr-90.

Table E-3. 216-U-14 Ditch Current Maximum Concentrations by Depth Below Ground Surface (picoCuries per gram).^a

Depth (ft)	Am-241	Cs-137	Pu-239 ^b	Sr-90 ^c
0		2,228		
5	1.6	2,228	2.1	5.2
10	1.6	2,228		5.2
15	1.6	2,228		5.2
20				
25				
30				
35				
40				
45				4.6
50				

Source: DOE/RL-2003-11, *Remedial Investigation Report for the 200-CW-5 U Pond/Z Ditches Cooling Water Group, the 200-CW-2 S Pond and Ditches Cooling Water Group, the 200-CW-4 T Pond and Ditches Cooling Water Group, and the 200-SC-1 Steam Condensate Group Operable Units.*

^aBlank cells represent zero or negligible results.

^bPu-239/Pu-240 values represented as totally Pu-239.

^cTotal strontium values represented as totally Sr-90.

Table E-4. 216-Z-11 Ditch Current Maximum Concentrations by Depth Below Ground Surface (picoCuries per gram).^a

Depth (ft)	Am-241	Pu-238	Pu-239 ^b
0	3,094	3,388	40,000
5	3,094	3,388	40,000
10	3,094	3,388	40,000
15	3,094		40,000
20			
25			
30			
35			
40			
45			
50			

Source: DOE/RL-2003-11, *Remedial Investigation Report for the 200-CW-5 U Pond/Z Ditches Cooling Water Group, the 200-CW-2 S Pond and Ditches Cooling Water Group, the 200-CW-4 T Pond and Ditches Cooling Water Group, and the 200-SC-1 Steam Condensate Group Operable Units.*

^aBlank cells represent zero or negligible results.

^bPu-239/Pu-240 values represented as totally Pu-239.

Table E-5. 216-Z-1-D Ditch Current Maximum Concentrations by Depth Below Ground Surface (picoCuries per gram).^a

Depth (ft)	Am-241	Pu-238	Pu-239 ^b	Ra-226
0				
5	7,870,000	5,252	780,000	5,200
10	7,870,000		780,000	
15				
20				
25				
30				
35				
40				
45				
50				

Source: DOE/RL-2003-11, *Remedial Investigation Report for the 200-CW-5 U Pond/Z Ditches Cooling Water Group, the 200-CW-2 S Pond and Ditches Cooling Water Group, the 200-CW-4 T Pond and Ditches Cooling Water Group, and the 200-SC-1 Steam Condensate Group Operable Units.*

^aBlank cells represent zero or negligible results.

^bPu-239/Pu-240 values represented as Pu-239.

Table E-6. 216-Z-19 Ditch Current Maximum Concentrations by Depth Below Ground Surface (picoCuries per gram).^a

Depth (ft)	Am-241	Pu-238	Pu-239 ^b
0	27,951		13,000,000
5	27,951	5,500	13,000,000
10	27,951	5,500	13,000,000
15			
20			
25			
30			
35			
40			
45			
50			

Source: DOE/RL-2003-11, *Remedial Investigation Report for the 200-CW-5 U Pond/Z Ditches Cooling Water Group, the 200-CW-2 S Pond and Ditches Cooling Water Group, the 200-CW-4 T Pond and Ditches Cooling Water Group, and the 200-SC-1 Steam Condensate Group Operable Units.*

^aBlank cells represent zero or negligible results.

^bPu-239/Pu-240 values represented as Pu-239.

Table E-7. 216-A-25 Gable Mountain Pond Current Maximum Concentrations by Depth Below Ground Surface (picoCuries per gram).^a

Depth (ft)	Am-241	Cs-137	Pu-239 ^b	Sr-90 ^c	Th-230	Th-232
0		7,180		54	1.22	1.26
5	5.94	7,180	20	54	1.22	1.26
10	5.94	7,180	20	54	1.22	1.26
15		7,180		54	1.22	1.26
20		7,180		54	1.22	1.26
25				54	1.22	1.26
30				54		
35				54		
40						
45						
50						

Source: DOE/RL-2000-35, *200-CW-1 Operable Unit Remedial Investigation Report.*

^aBlank cells represent zero or negligible results.

^bPu-239/Pu-240 values represented as Pu-239.

^cTotal strontium values represented as Sr-90.

Table E-8. 216-T-26 Crib Current Maximum Concentrations by Depth Below Ground Surface (picoCuries per gram).^a

Depth (ft)	Am-241	Cs-137	Pu-238	Pu-239 ^b	Sr-90 ^c	Tc-99	U-233	U-238
0								
5								
10								4.6
15	2.0	47,900		45	1,500		3.1	4.6
20		47,900		45	1,500		3.1	4.6
25		47,900					3.1	4.6
30								
35	227	21,200	35	6,320	49,100		18	21
40								
45								
50								
55								
60								
65						1.68	1.09	1.43
70								
75								
80								
85								
90						4.87	3.27	2.65
95								
100								

Source: DOE/RL-2002-42, *Remedial Investigation Report for the 200-TW-1 and 200-TW-2 Operable Units (Includes the 200-PW-5 Operable Unit)*.

^aBlank cells represent zero or negligible results.

^bPu-239/Pu-240 values represented as Pu-239.

^cTotal strontium values represented as Sr-90.

Table E-9. Dose at 150 Years by Excavation Depth (millirem per year).^a

Excavation Depth	Site						
	216-U-10 ^b Pond	216-U-14 Ditch	216-Z-11 Ditch	216-Z-1-D Ditch	216-Z-19 Ditch	216-A-25 Gable Mountain Pond	216-T-26 Crib
0	3.5	1.8	25	3.3×10^3	5.5×10^3	7.4	35
5	2.6	1.4	19	3.3×10^3	3.7×10^3	5.9	35
10	1.7	0.91	13	1.6×10^3	1.8×10^3	4.4	35
15	1.7	0.46	6.2	0	0	2.9	35
20	1.7	4.5×10^{-5}	0	0	0	1.5	25
25	1.7	4.5×10^{-5}	0	0	0	3.1×10^{-3}	16
30	1.7	4.5×10^{-5}	0	0	0	1.2×10^{-3}	5.8
35	1.7	4.5×10^{-5}	0	0	0	5.8×10^{-4}	5.8
40	1.7	4.5×10^{-5}	0	0	0	0	1.4×10^{-3}
45	1.7	4.5×10^{-5}	0	0	0	0	1.4×10^{-3}
50	1.7	4.5×10^{-5}	0	0	0	0	1.4×10^{-3}

^aCompare dose to the 15 mrem/yr standard to determine excavation depth needed.

^bBelow 10-ft excavation, dose remains at 1.7 mrem/yr until 135 ft of excavation, at which point it becomes zero.

Table E-10. Dose at 500 Years by Excavation Depth (millirem per year).*

Excavation Depth	Site						
	216-U-10 ^b Pond	216-U-14 Ditch	216-Z-11 Ditch	216-Z-1-D Ditch	216-Z-19 Ditch	216-A-25 Gable Mountain Pond	216-T-26 Crib
0	0.12	1.4×10^{-3}	24	2.0×10^3	5.4×10^3	0.017	0.97
5	0.073	1.3×10^{-3}	18	2.0×10^3	3.6×10^3	0.015	0.97
10	0.023	6.4×10^{-4}	12	950	1.8×10^3	0.001	0.97
15	0.023	3.2×10^{-4}	5.9	0	0	5.0×10^{-3}	0.96
20	0.023	1.1×10^{-8}	0	0	0	3.2×10^{-3}	0.93
25	0.023	1.1×10^{-8}	0	0	0	1.3×10^{-3}	0.92
30	0.023	1.1×10^{-8}	0	0	0	2.8×10^{-7}	0.91
35	0.023	1.1×10^{-8}	0	0	0	1.4×10^{-7}	0.91
40	0.023	1.1×10^{-8}	0	0	0	0	1.4×10^{-3}
45	0.023	1.1×10^{-8}	0	0	0	0	1.4×10^{-3}
50	0.023	0	0	0	0	0	1.4×10^{-3}

*Compare dose to the 15 mrem/yr standard to determine excavation depth needed.

Table E-11. Individual Radionuclide Preliminary Remediation Goals (picoCuries per gram).*

Site	Am-241	Cs-137	Pu-238	Pu-239	Ra-226	Se-79	Sr-90	Tc-99	Th-230	Th-232	U-233	U-234	U-235	U-238
216-U-10 Pond	1.6×10^4	1.5×10^4	7.7×10^4	2.1×10^4		4.0×10^6	3.0×10^5	4.9×10^5		3.0×10^3	1.4×10^3	1.5×10^3	2.3×10^3	9.8×10^3
216-U-14 Ditch	2.0×10^4	1.8×10^4		2.7×10^4			3.8×10^5							
216-Z-11 Ditch	2.0×10^4		9.6×10^4	2.7×10^4										
216-Z-1-D Ditch	4.0×10^4		1.9×10^5	5.3×10^4	4.0×10^2									
216-Z-19 Ditch	2.7×10^4		1.3×10^5	3.6×10^4										
216-A-25 Gable Mountain Pond	1.0×10^4	9.2×10^3		1.3×10^4			1.9×10^3		3.5×10^4	1.9×10^3				
216-T-26 Crib	1.1×10^4	1.1×10^4	5.5×10^4	1.5×10^4			2.2×10^5	3.5×10^5			9.6×10^4			7.0×10^3

NOTE: Blank cell indicates the contaminant is not present.

*These preliminary remediation goals are the average concentrations in the soil column (not the garden) at time zero that would result in 15 mrem/yr for each radionuclide individually.

Table E-12. Sum of the Fractions of Average Soil Column Concentration Divided by Average Preliminary Remediation Goals.*

Site	Am-241	Cs-137	Pu-238	Pu-239	Ra-226	Se-79	Sr-90	Tc-99	Th-230	Th-232	U-233	U-234	U-235	U-238	Sum
216-U-10 Pond	0	0.3	0	0		0	0	0		0	0	0	0	0	0.3
216-U-14 Ditch	0	0.12		0			0								0.12
216-Z-11 Ditch	0.2		0	1.5											1.7
216-Z-1-D Ditch	200		0	15	13										230
216-Z-19 Ditch	1.1		0	370											370
216-A-25 Gable Mountain Pond	0	0.78		0			0		0	0					0.78
216-T-26 Crib	0.01	2.2	0	0.04			0.02	0			0	0			2.3

NOTE: Blank cell indicates the contaminant is not present.

*If the sum of the fractions is less than 1, then no remediation is indicated. A value of 1 represents 15 mrem/yr from the cumulative impact of all radionuclides.

Table E-13. Required Excavation Depths to Meet 15 Millirem per Year for Intruder at 150 and 500 Years.

Waste Site	Excavation Depth (ft) 150 Years	Excavation Depth (ft) 500 Years
216-U-10 Pond	0	0
216-U-14 Ditch	0	0
216-Z-11 Ditch	10	10
216-Z-1-D Ditch	15	15
216-Z-19 Ditch	15	15
216-T-26 Crib	30	0
216-A-25 Gable Mountain Pond	0	0

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