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Table 2-1. IRZ Site Remediation Project Cost Elements

COST ELEMENT	COMMENTS
Costs incurred before treatment	
Engineering design	See text.
Work Plan preparation	Also include submittal and editing required for regulatory acceptance, permit preparation. Include costs for bid solicitation for subcontractors.
Mobilization and preparatory work	Includes mobilization for injection well installation and system construction. May also include installation of additional monitoring wells if the preexisting network is inadequate.
Well installation	Surface and subsurface structures at the facility may interfere with well design and placement. Proper planning and design can minimize these costs.
Treatment costs	
Field supervision	Oversight of subcontractors for drilling, laboratory analyses, etc.
Injection system	Manual batch loading of substrate into the injection well array can be performed using relatively low cost injection systems that may be truck or trailer mounted. If a permanent injection set-up is required, additional capital costs will be incurred, including a system enclosure, permanent mixing tank/equipment, automated injection pumps and valving, and controls. Additional costs for this type of system may include below-grade piping to transfer the solution from the enclosure to the wells and provision of utilities (water and electric). However, a portion of the costs associated with the more permanent installation will be offset by the lower labor and field expense costs associated with the manual batch injections.
Substrate (food grade carbohydrate)	These costs are relatively low on a per pound basis but can become substantial if a site requires high doses due to high flow or electron acceptor load.
Labor, O&M	Automated loading of substrate into the injection well array will require more control equipment, but will reduce operations and maintenance costs.
Sampling and sample analysis	Labor required to collect groundwater samples from the treatment area, as well as costs for shipping, analysis and data interpretation should be included.
Utility costs	The main requirement should be a readily available source of potable water, preferably with a large flow rate. Fuel for vehicles and electrical power or gasoline for pumps is also likely to be required but in small quantity.
Other costs	These include disposal of drill cuttings and purge water. During application of IRZ, process waste is limited to disposal of contaminated groundwater generated during well purging.
Interim reporting	Technical performance and financial interim reports are normally required.
After treatment costs	
Final reporting	Reports documenting system performance must be prepared for site closure.
Demobilization (equipment, material, and personnel.	Must include labor and subcontractor costs required to remove any equipment or surface facilities associated with the demonstrations. It must be assessed if injection and monitoring wells need to be removed/abandoned. Some site restoration can typically be anticipated.

Table 6-1. Summary of Corn Syrup Injection Events and Progress Monitoring round Dates

Date and Activity	Description
June 4, 2003 Baseline Sampling Event &1st Injection Event	210 gallons of reagent injected into IRWMW-1. The recipe was: 190 gallons water, 20 gallons corn syrup, 0.7 pounds bromide.
June 6, 2003	Progress Monitoring Round 1
June 122003	Progress Monitoring Round 2
June 18, 2003 Progress Monitoring & Injection Event	Progress Monitoring Round 3 and 210 gallons of reagent injected into each IRZMW-1 and IW-1. The recipe used was the same as the previous injection (June 4) for each well.
June 20, 2003	Progress Monitoring Round 4
June 23, 2003	Progress Monitoring Round 5
June 25, 2003	Progress Monitoring Round 6
June 30, 2003	Progress Monitoring Round 7
July 3, 2003	Progress Monitoring Round 8
July 9, 2003 Progress Monitoring & Injection Event	Progress Monitoring Round 9 and 400 gallons reagent injected into each IRZMW-1 and IW-1. The recipe for each well was: 380 gallons water, 20 gallons corn syrup, 0.7 pounds bromide.
July 16, 2003	Progress Monitoring Round 10
July 23, 2003	Progress Monitoring Round 11
July 31, 2003	Progress Monitoring Round 12
August 15, 2003 Injection Event	400 gallons reagent injected into each IRZMW-1 and IW-1. The recipe for each well was: 380 gallons water, 20 gallons corn syrup, 1.4 pounds bromide.
August 22, 2003	Progress Monitoring Round 13
August 25, 2003	Progress Monitoring Round 14
September 4, 2003	Progress Monitoring Round 15 and Final Sampling Round

Table 6-2. Summary of Baseline Groundwater Conditions

		GENERAL GROUNDWATER QUALITY											DEGRADATION PRODUCTS
		Perchlorate	Temperature	pH	ORP	Elec. Cond.	Biological Oxygen Demand (BOD)	Chemical Oxygen Demand (COD)	Dissolved Organic Carbon (DOC)	Bromide	Total Phosphorus	Total Dissolved Solids	Chloride (Cl^-)
Well Location	Units:	ug/L	Deg. C	su	mV	umhos/cm	mg-O_2/L	mg-O_2/L	mg/L	mg/L	mg/L	mg/L	mg/L
	EPA Method Number:	314.0	Field Test	Field Test	Field Test	Field Test	405.1	410.4	415.1	320.1	365.2	160.1	300.0
	Date												
IW1	6/4/2003	than	20.92	7.05	168.9	426	35.0	185.0	0.99	<1		276.0	43.9
IRZMW1	2/21/2003	5,270	20.58	7.22	82.1	462	15.0	21.9	2.4	<0.48	0.15	345	28.9
IRZMW2	2/21/2003	9,340	21.18	7.24	148.2	458	11.7	21.9	2.1	<0.48	0.21	363	30.7
IRZMW3	2/21/2003	3,640	20.66	7.36	13.2	501	6.9	9.4 J	2.0	<0.48	0.076 J	372	36.2
MW-7	2/21/2003	4,590	20.21	7.24	55.6	449	3.4	9.4 J	2.3	<0.48	<0.1	325	29.2

		ELECTRON ACCEPTORS							ALCOHOL	VOLATILE ORGANIC COMPOUNDS						
		Dissolved Oxygen	Nitrate (NO_3) as N	Total Kjeldahl Nitrogen (TKN)	Ferrous Iron (Fe^{2+})	Sulfate	Total Sulfide	Dissolved Cardon Dioxide	Methanol	Carbon Tetrachloride	Chloroform	1,1-Dichloroethene	Methylene Chloride	Tetrachloroethene	Toluene	Trichloroethene
Well Location	Units:	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	EPA Method Number:	Field Test	353.3	351.3	SM3500DFE-	375.4	376.2	SM4500	8015B	8260B	8260B	8260B	8260B	8260B	8260B	8260B
	Date															
IW1	6/4/2003	6.00	7.5	<0.2	<0.05	48.1	<0.2	30.5	<5	**37**	**9**	**2 J**	<5	**3 J**	**0.3 J**	**4 J**
IRZMW1	2/21/2003	4.86	8.1	<0.2	<0.05	47.1	<0.2	21.1	<5	**171**	**27**	**11**	**0.7 J**	**21**	<5	**13**
IRZMW2	2/21/2003	5.77	12.7	<0.2	<0.05	46.1	<0.2	29.7	<5	**19**	**12**	<5	<5	<5	**0.8 J**	**1 J**
IRZMW3	2/21/2003	4.31	9.5	<0.2	<0.05	53.6	<0.2	27.9	<5	**126**	**22**	**8**	<5	**14**	<5	**10**
MW-7	2/21/2003	6.41	9.6	<0.2	<0.05	39.1	<0.2	18.0	**3 J**	**244**	**28**	**14**	**0.8 J**	**25**	<5	**10**

		METALS															
		Arsenic	Barium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
Well Location	Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
	EPA Method Number:	6010B	6010B	6010B	6010B	6010B	6010B	6010B	6010B	7470A	6010B	6010B	6010B	6010B	6010B	6010B	6010B
	Date																
IW1	6/4/2003	7.9	435	846	29.7	163	100,000	37.7	1,010	0.32 J	90.1	696	3.1 J	49.1	<10	44.5	300
IRZMW1	2/21/2003	1.8 J	67.0	36.4	0.83 J	3.0 J	2,390	<5	204	0.041 J	24.5	18.2	<10	<10	3.6 J	5.6 J	111
IRZMW2	2/21/2003	<5	83.3	100	9.3	5.0 J	3,070	<5	90	0.045 J	22.9	64.8	<10	<10	4.9 J	7.5 J	22.7
IRZMW3	2/21/2003	8.5	149	141	13.2	30.7	22,400	5.6	663	0.22 J	45.6	82.2	3.3 J	<10	<10	30.3	481
MW-7	2/21/2003	<5	54.3	13.5	<5	<10	142	<5	2.2 J	0.028 J	7.8	6.5	2.9 J	<10	1.8 J	3.2 J	5.2 J

Table 7-1. Quality Control Acceptance Criteria

Analyte/Method	QC Parameter	Accuracy (%R)	Precision (RPD)
Volatile Organic Compounds (Method 8260)	***Surrogates:***		
	1,2-Dichloroethane-d4 (*lab limits**)	70-129 *(70-121)*	- -
	Toluene-d8 (*lab limits*)	73-129 *(75-121)*	- -
	4-Bromofluorobenzene (BFB) (*lab limits*)	70-129 *(79-124)*	- -
	Dibromofluoromethane (*lab limits*)	— *(75-123)*	- -
	Internal Standards:		
	Chlorobenzene (*lab limits*)	- *(50-200)*	- -
	1,2-Dichlorobenzene-d4 (*lab limits*)	- *(50-200)*	- -
	Fluorobenzene (*lab limits*)	- *(50-200)*	- -
	Laboratory Control Sample (LCS)/LCS Duplicate (LCSD)		
	Benzene (*lab limits*)	65-121 *(65-134)*	28 -
	Chlorobenzene (*lab limits*)	65-134 *(69-128)*	35 -
	1,1-Dichloroethene (*lab limits*)	65-127 *(65-134)*	31 -
	Toluene (*lab limits*)	65-134 *(65-132)*	35 -
	Trichloroethene (*lab limits*)	65-125 *(65-124)*	30 -
Perchlorate (Method 314)	***Perchlorate Standard (LCS/LCSD)*** (*lab limits*)	75-125 *(80-120)*	≤20 *(20)*
Metals	***Elemental Standard (LCS/LCSD)*** (*lab limits*)	75-125 *(80-120)*	20 *(20)*

Analyte/Method	QC Parameter	Accuracy (%R)	Precision (RPD)
(Method 6010B/7470A)			
Formaldehyde (Method 8315A)	***LCS/LCSD*** (*lab limits)*	- *(60-140)*	- *(30)*
Alcohols (Method 8015B)	***LCS/LCSD*** (*lab limits)*	- *(65-135)*	- *(30)*
Methane (Method RSK175)	***LCS/LCSD*** (*lab limits)*	- *(65-106)*	- *(30)*

Table 7-2a. Summary of Demonstration Data, Perchlorate and General Water Quality Indicators

				GENERAL GROUNDWATER QUALITY											DEGRADATION PRODUCTS
				Perchlorate	Temperature	pH	ORP	Elec. Cond.	Biological Oxygen Demand (BOD)	Chemical Oxygen Demand (COD)	Dissolved Organic Carbon (DOC)	Bromide	Total Phosphorus	Total Dissolved Solids	Chloride (Cl^-)
			Units:	ug/L	Deg. C	su	mV	umhos/cm	mg-O_2/L	mg-O_2/L	mg/L	mg/L	mg/L	mg/L	mg/L
Event	Well Location	Well Type	EPA Method Number:	314.0	Field Test	Field Test	Field Test	Field Test	405.1	410.4	415.1	320.1	365.2	160.1	300.0
			Date												
Baseline Non-Injection Low-flow Sampling	IW1	Monitoring	6/4/2003	3,390	20.92	7.05	168.9	426	35.0	185.0	0.99	<1		276.0	43.9
	IRZMW1	Injection	2/21/2003	5,270	20.58	7.22	82.1	462	15.0	21.9	2.4	<0.48	0.15	345	28.9
	IRZMW2	Monitoring	2/21/2003	9,340	21.18	7.24	148.2	458	11.7	21.9	2.1	<0.48	0.21	363	30.7
	IRZMW3	Monitoring	2/21/2003	3,640	20.66	7.36	13.2	501	6.9	9.4 J	2.0	<0.48	0.076 J	372	36.2
	MW-7	Monitoring	2/21/2003	4,590	20.21	7.24	55.6	449	3.4	9.4 J	2.3	<0.48	<0.1	325	29.2
Progress Monitoring 1	IW1	Monitoring	6/6/2003		20.26	7.03	193.7	467							
	IRZMW1	Monitoring	6/6/2003		20.35	6.5	91.7	496							
	IRZMW2	Monitoring	6/6/2003		20.77	7.19	210.9	467							
	IRZMW3	Monitoring	6/6/2003		20.28	7.13	216.7	487							
	MW-7	Monitoring	6/6/2003		20.26	7.26	237	489							
Progress Monitoring 2	IW1	Monitoring	6/12/2003		20.52	6.96	212.2	467							
	IRZMW1	Monitoring	6/12/2003		20.94	6.52	-49.4	486			87				
	IRZMW2	Monitoring	6/12/2003		21.8	7.3	187.7	462							
	IRZMW3	Monitoring	6/12/2003		21.32	7.08	172.7	475							
	MW-7	Monitoring	6/12/2003		20.69	7.32	246.7	488							
Progress Monitoring 3 and Injection	IW1	Injection	6/18/2003		20.9	7.05	238.7	469							
	IRZMW1	Injection	6/18/2003	3,750	20.58	6.5	179	481							
	IRZMW2	Monitoring	6/18/2003		22.99	7.32	230.1	461							
	IRZMW3	Monitoring	6/18/2003		21.41	7.23	203.7	473							
	MW-7	Monitoring	6/18/2003		21.16	7.38	224.8	489							
Progress Monitoring 4	IW1	Monitoring	6/20/2003		21.78	6.58	-47.4	496							
	IRZMW1	Monitoring	6/20/2003		20.42	6.78	252.3	489							
	IRZMW2	Monitoring	6/20/2003		20.35	7.08	221.9	464							
	IRZMW3	Monitoring	6/20/2003		20.53	7.15	223.1	477							
	MW-7	Monitoring	6/20/2003		20.47	7.33	198.2	492							
Progress Monitoring 5	IW1	Monitoring	6/23/2003		20.99	6.47	-41.6	493							
	IRZMW1	Monitoring	6/23/2003		20.61	6.50	-427	497							
	IRZMW2	Monitoring	6/23/2003		20.75	7.18	268.6	465							
	IRZMW3	Monitoring	6/23/2003		20.54	7.18	-280.6	478							
	MW-7	Monitoring	6/23/2003		20.57	7.38	220.0	488							
Progress Monitoring 6	IW1	Monitoring	6/25/2003	802	21.27	6.49	-137.0	478							
	IRZMW1	Monitoring	6/25/2003	1030	22.13	3.81	-279.0	1035							
	IRZMW2	Monitoring	6/25/2003		21.95	7.17	201.1	468							
	IRZMW3	Monitoring	6/25/2003	4000	21.42	7.15	-284.6	477							
	MW-7	Monitoring	6/25/2003		20.69	7.31	211.3	488							
Progress Monitoring 7 and sampling	IW1	Monitoring	6/30/2003	1910	22.2	6.5	89.5	468			2.7	<1			
	IRZMW1	Monitoring	6/30/2003	3260	23.54	4.35	203.7	540			536	<1			
	IRZMW2	Monitoring	6/30/2003	1810	21.84	7.01	131.9	462			3.5	<1			
	IRZMW3	Monitoring	6/30/2003	3390	23.01	7.04	137.8	476			2.6	<1			
	MW-7	Monitoring	6/30/2003	4090	22.25	7.08	216.8	486			2.1	<1			
Progress Monitoring 8	IW1	Monitoring	7/3/2003		22.77	6.73	151.8	473							
	IRZMW1	Monitoring	7/3/2003		23.24	4.74	182.1	507							
	IRZMW2	Monitoring	7/3/2003		21.7	7.13	211.4	467							
	IRZMW3	Monitoring	7/3/2003		24.05	7.19	107.3	477							
	MW-7	Monitoring	7/3/2003		22.75	7.28	199.7	489							
Progress Monitoring 9 Injection	IW1	Injection	7/9/2003		22.11	7	33.0	470							
	IRZMW1	Injection	7/9/2003		23.57	5.06	127.4	507							
	IRZMW2	Monitoring	7/9/2003		21.33	7.27	130.4	471							
	IRZMW3	Monitoring	7/9/2003		22.3	7.2	193	481							
	MW-7	Monitoring	7/9/2003		21.64	7.32	139.9	491							
Progress Monitoring 10	IW1	Monitoring	7/16/2003	1,020	21.8	6.9	-76.8	404							
	IRZMW1	Monitoring	7/16/2003												
	IRZMW2	Monitoring	7/16/2003	1,880	25.22	7.31	191.8	415							
	IRZMW3	Monitoring	7/16/2003	3,650	23.36	7.3	-70.9	421							
	MW-7	Monitoring	7/16/2003		22.9	7.3	158.9	429							
Progress Monitoring 11	IW1	Monitoring	7/23/2003	<4	24.68	6.39	-278.3	529			47.9				
	IRZMW1	Monitoring	7/23/2003	4,070	26.75	6.27	46.6	473			204				
	IRZMW2	Monitoring	7/23/2003												
	IRZMW3	Monitoring	7/23/2003	3,810	23.63	7.22	73.6	468			2.4				
	MW-7	Monitoring	7/23/2003	3,060	22.26	7.38	55.2	463			4J				
Progress Monitoring 12	IW1	Monitoring	7/31/2003												
	IRZMW1	Monitoring	7/31/2003												
	IRZMW2	Monitoring	7/31/2003		20.9	6.45	172.7	474							
	IRZMW3	Monitoring	7/31/2003		23.93	7.09	110.4	493							
	MW-7	Monitoring	7/31/2003		23.36	7.25	110.1	490							
Well Redevelop-ment	IW1	Redevelop	8/13/2003												
	IRZMW1	Redevelop	8/13/2003												
	IRZMW2	Redevelop	8/13/2003												
	IRZMW3														
	MW-7														
Injection Event	IW1	Injection	8/15/2003												
	IRZMW1	Injection	8/15/2003												
	IRZMW2														
	IRZMW3														
	MW-7														
Progress Monitoring 13	IW1	Monitoring	8/22/2003			6.67	-68.8								
	IRZMW1	Monitoring	8/22/2003												
	IRZMW2	Monitoring	8/22/2003			7.01	95.4								
	IRZMW3	Monitoring	8/22/2003												
	MW-7	Monitoring	8/22/2003												
Progress Monitoring 14	IW1	Monitoring	8/25/2003		24.63	6.61	28.4	462							
	IRZMW1	Monitoring	8/25/2003												
	IRZMW2	Monitoring	8/25/2003		26.09	7.01	89.9	434							
	IRZMW3	Monitoring	8/25/2003		22.82	6.99	83.2	527							
	MW-7	Monitoring	8/25/2003		26.06	7.25	98.6	490							
Progress Monitoring 15 and Sampling	IW1	Monitoring	9/4/2003	649	21.71	6.77	63.7	502	1.9J	<20	<1	0.83J	0.047J	265	23.9
	IRZMW1	Monitoring	9/4/2003	2,810	22.9	6.82	149.7	556	2.4	<20	<1	0.67J	0.13	313	27.9
	IRZMW2	Monitoring	9/4/2003	850	25.25	6.95	204.8	535	<2	<20	<1	<1	0.081J	297	25.9
	IRZMW3	Monitoring	9/4/2003	3,640	23.43	7.02	131.3	609	<2	<20	<1	0.57J	0.053J	348	29.0
	MW-7	Monitoring	9/4/2003	2,050	23.16	7.19	213.3	547	<2	<20	<1	<1	<0.1	295	29.0

Table 7-2b. Summary of Demonstration Data, Electron Acceptors, their Metabolic Products and Alcohols

				ELECTRON ACCEPTORS											ALCOHOLS IN WATER								
				Dissolved Oxygen	Nitrate (NO_3) as N	NO_2	Total Kjeldahl Nitrogen (TKN)	Ferrous Iron (Fe^{2+})	Fe^{3+}	Sulfate	H_2S	Total Sulfide	Dissolved Carbon Dioxide	Formaldehyde	Methanol	Ethanol	I-Propanol	2-Propanol (Iso-Propanol)	Isobutyl Alcohol	I-Butanol	2-Butanol	Methane
			Units:	mg/L	mg/L		mg/L	mg/L		mg/L		mg/L	mg/L	ug/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L
Event	Well Location	Well Type	EPA Method Number	Field Test	353.3	Field Test	351.3	SM3500DFE-	Field Test	375.4	Field Test	376.2	SM4500	8315A	8015B	8015B	8015B	8015B	8015B	8015B	8015B	8015B	RSK175
			Date																				
Baseline Negative Low-flow Sampling	IW1	Monitoring	6/4/2003	6.00	7.5		<0.2	<0.05		48.1		<0.2	30.5	<10	<5	<5	<5	<5	<5	<5	<5	<3
	IRZMW1	Injection	2/21/2003	4.86	8.1		<0.2	<0.05		47.1		<0.2	21.1	<10	<5	<5				<5	<5	<3
	IRZMW2	Monitoring	2/21/2003	5.77	12.7		<0.2	<0.05		46.1		<0.2	29.7	<10	<5	<5				<5	<5	<3
	IRZMW3	Monitoring	2/21/2003	4.31	9.5		<0.2	<0.05		53.6		<0.2	27.9	<10	<5	<5				<5	<5	<3
	MW-7	Monitoring	2/21/2003	6.41	9.6		<0.2	<0.05		39.1		<0.2	18.0	<10	**3 J**	<5				<5	<5	<3
Progress Monitoring 1	IW1	Monitoring	6/6/2003	8.24																		
	IRZMW1	Monitoring	6/6/2003	8.78																		
	IRZMW2	Monitoring	6/6/2003	7.84																		
	IRZMW3	Monitoring	6/6/2003	7.94																		
	MW-7	Monitoring	6/6/2003	8.29																		
Progress Monitoring 2	IW1	Monitoring	6/12/2003	8.98																		
	IRZMW1	Monitoring	6/12/2003	6.23					0		0											
	IRZMW2	Monitoring	6/12/2003	6.04																		
	IRZMW3	Monitoring	6/12/2003	10.61					0		0											
	MW-7	Monitoring	6/12/2003	9.89					0		0											
Progress Monitoring 3 and Injection	IW1	Injection	6/18/2003	7.29					0		0											
	IRZMW1	Injection	6/18/2003	2.24					0		0											
	IRZMW2	Monitoring	6/18/2003	6.67					0		0											
	IRZMW3	Monitoring	6/18/2003	8.16					0		0											
	MW-7	Monitoring	6/18/2003	9.35					0		0.8											
Progress Monitoring 4	IW1	Monitoring	6/20/2003	1.11					0		0											
	IRZMW1	Monitoring	6/20/2003	4.47					0		0											
	IRZMW2	Monitoring	6/20/2003	7.17					0		0											
	IRZMW3	Monitoring	6/20/2003	7.63					0		0											
	MW-7	Monitoring	6/20/2003	9.22					0		0											
Progress Monitoring 5	IW1	Monitoring	6/23/2003	0.39					0		0											
	IRZMW1	Monitoring	6/23/2003	3.19																		
	IRZMW2	Monitoring	6/23/2003	7.88																		
	IRZMW3	Monitoring	6/23/2003	5.87					0		0											
	MW-7	Monitoring	6/23/2003	9.77					0		0											
Progress Monitoring 6	IW1	Monitoring	6/25/2003	0.22					0.57		0											
	IRZMW1	Monitoring	6/25/2003	0.25					1.0		0											
	IRZMW2	Monitoring	6/25/2003	7.16					0.16		0											
	IRZMW3	Monitoring	6/25/2003	4.84					0.13		0											
	MW-7	Monitoring	6/25/2003	9.42					0.3		0											
Progress Monitoring 7 and sampling	IW1	Monitoring	6/30/2003	2.85		0			0.1		0											
	IRZMW1	Monitoring	6/30/2003	0.95		5.5			0		0											
	IRZMW2	Monitoring	6/30/2003	8.44																		
	IRZMW3	Monitoring	6/30/2003	5.64					0		0											
	MW-7	Monitoring	6/30/2003	12.9		5			0		0											
Progress Monitoring 8	IW1	Monitoring	7/3/2003	2.46		8			0		0											
	IRZMW1	Monitoring	7/3/2003	1.89																		
	IRZMW2	Monitoring	7/3/2003	9.96		6.5			0		0.2											
	IRZMW3	Monitoring	7/3/2003	6.14		10			0		0											
	MW-7	Monitoring	7/3/2003	13.27		9.5			0		0											
Progress Monitoring 9 Injection	IW1	Injection	7/9/2003	1.05		7																
	IRZMW1	Injection	7/9/2003	0.81		10																
	IRZMW2	Monitoring	7/9/2003	8.68		8																
	IRZMW3	Monitoring	7/9/2003	7.18		8																
	MW-7	Monitoring	7/9/2003	10.01		9																
Progress Monitoring 10	IW1	Monitoring	7/16/2003	6.73		5			0.9		0											
	IRZMW1	Monitoring	7/16/2003																			
	IRZMW2	Monitoring	7/16/2003	5.01		6			0		0											
	IRZMW3	Monitoring	7/16/2003	3.03		9			0		0											
	MW-7	Monitoring	7/16/2003	6.77		17			0		0											
Progress Monitoring 11	IW1	Monitoring	7/23/2003	1.17																		
	IRZMW1	Monitoring	7/23/2003	1.73		0			0.7		0											
	IRZMW2	Monitoring	7/23/2003																			
	IRZMW3	Monitoring	7/23/2003	8.45		6			0		0											
	MW-7	Monitoring	7/23/2003	9.31		9			0.3		0											
Progress Monitoring 12	IW1	Monitoring	7/31/2003																			
	IRZMW1	Monitoring	7/31/2003																			
	IRZMW2	Monitoring	7/31/2003	7.62																		
	IRZMW3	Monitoring	7/31/2003	7.34		7			0.2		0											
	MW-7	Monitoring	7/31/2003	8.46		6			0.26		0											
Well Redevelop-ment	IW1	Redevelop	8/13/2003																			
	IRZMW1	Redevelop	8/13/2003																			
	IRZMW2	Redevelop	8/13/2003																			
	IRZMW3																					
	MW-7																					
Injection Event	IW1	Injection	8/15/2003																			
	IRZMW1	Injection	8/15/2003																			
	IRZMW2																					
	IRZMW3																					
	MW-7																					
Progress Monitoring 13	IW1	Monitoring	8/22/2003																			
	IRZMW1	Monitoring	8/22/2003																			
	IRZMW2	Monitoring	8/22/2003																			
	IRZMW3	Monitoring	8/22/2003																			
	MW-7	Monitoring	8/22/2003																			
Progress Monitoring 14	IW1	Monitoring	8/25/2003	6.13		6			0													
	IRZMW1	Monitoring	8/25/2003																			
	IRZMW2	Monitoring	8/25/2003	11.11		9			0													
	IRZMW3	Monitoring	8/25/2003	12.54		6			0													
	MW-7	Monitoring	8/25/2003	11.27		8			0													
Progress Monitoring 15 and Sampling	IW1	Monitoring	9/4/2003	6.68	5	7	1.3	<0.05	0.29	46.0		<0.2	47.4	<10	<5	<5	<5	<5	<5	<5	<5	<5	<3
	IRZMW1	Monitoring	9/4/2003	6.61	6.4	10	0.6	<0.05	0.6	32.8		<0.2	31.1	<10	<5	<5	<5	<5	<5	<5	<5	<5	<3
	IRZMW2	Monitoring	9/4/2003	7.97	6.2	11	<0.2	<0.05	0.2	70.7		<0.2	23.5	<10	<5	<5	<5	<5	<5	<5	<5	<5	<3
	IRZMW3	Monitoring	9/4/2003	8	5.9	10	0.20J	<0.05	0.3	59.1		<0.2	23.2	<10	<5	<5	<5	<5	<5	<5	<5	<5	<3
	MW-7	Monitoring	9/4/2003	8.71	7.4	6	<0.2	<0.05	0.45	47.9		<0.2	13.1	<10	<5	<5	<5	<5	<5	<5	<5	<5	<3

Table 7-2c. Summary of Demonstration Data, Volatile Organic Compounds

				VOCs																	
				Acetone	Benzene	Bromo-benzene	Bromochloro-methane	Bromodi-chloromethane	Bromoform	Bromo-methane	2-Butanone (MEK)	N-Butylbenzene	SEC-Butylbenzene	Tert-Butylbenzene	Carbon Disulfide	Carbon Tetrachloride	Chloro-benzene	Chloro-dibromo-methane	Chloro-ethane	Chloroform	Chloro-methane
			Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Event	Well Location	Well Type	EPA Method Number:	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B
			Date																		
Baseline No Injection Lowflow Sampling	IW1	Monitoring	6/4/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	**37**	<5	<5	<5	**9**	<5
	IRZMW1	Injection	2/21/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	**171**	<5	<5	<5	**27**	<5
	IRZMW2	Monitoring	2/21/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	**19**	<5	<5	<5	**12**	<5
	IRZMW3	Monitoring	2/21/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	**126**	<5	<5	<5	**22**	<5
	MW-7	Monitoring	2/21/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	**244**	<5	<5	<5	**28**	<5
Progress Monitoring 1	IW1	Monitoring	6/6/2003																		
	IRZMW1	Monitoring	6/6/2003																		
	IRZMW2	Monitoring	6/6/2003																		
	IRZMW3	Monitoring	6/6/2003																		
	MW-7	Monitoring	6/6/2003																		
Progress Monitoring 2	IW1	Monitoring	6/12/2003																		
	IRZMW1	Monitoring	6/12/2003																		
	IRZMW2	Monitoring	6/12/2003																		
	IRZMW3	Monitoring	6/12/2003																		
	MW-7	Monitoring	6/12/2003																		
Progress Monitoring 3 and Injection	IW1	Injection	6/18/2003																		
	IRZMW1	Injection	6/18/2003																		
	IRZMW2	Monitoring	6/18/2003																		
	IRZMW3	Monitoring	6/18/2003																		
	MW-7	Monitoring	6/18/2003																		
Progress Monitoring 4	IW1	Monitoring	6/20/2003																		
	IRZMW1	Monitoring	6/20/2003																		
	IRZMW2	Monitoring	6/20/2003																		
	IRZMW3	Monitoring	6/20/2003																		
	MW-7	Monitoring	6/20/2003																		
Progress Monitoring 5	IW1	Monitoring	6/23/2003																		
	IRZMW1	Monitoring	6/23/2003																		
	IRZMW2	Monitoring	6/23/2003																		
	IRZMW3	Monitoring	6/23/2003																		
	MW-7	Monitoring	6/23/2003																		
Progress Monitoring 6	IW1	Monitoring	6/25/2003																		
	IRZMW1	Monitoring	6/25/2003																		
	IRZMW2	Monitoring	6/25/2003																		
	IRZMW3	Monitoring	6/25/2003																		
	MW-7	Monitoring	6/25/2003																		
Progress Monitoring 7 and Sampling	IW1	Monitoring	6/30/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	**14**	<5	<5	<5	**6**	**0.7 J**
	IRZMW1	Monitoring	6/30/2003	**770**	<25	<25	<25	<25	<25	<25	**4 J**	<25	<25	<25	<25	**40**	<25	<25	<25	**9 J**	<25
	IRZMW2	Monitoring	6/30/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	**18**	<5	<5	<5	**5 J**	<5
	IRZMW3	Monitoring	6/30/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	**55**	<5	<5	<5	**9**	<5
	MW-7	Monitoring	6/30/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	**69**	<5	<5	<5	**9**	<5
Progress Monitoring 8	IW1	Monitoring	7/3/2003																		
	IRZMW1	Monitoring	7/3/2003																		
	IRZMW2	Monitoring	7/3/2003																		
	IRZMW3	Monitoring	7/3/2003																		
	MW-7	Monitoring	7/3/2003																		
Progress Monitoring 9 Injection	IW1	Injection	7/9/2003																		
	IRZMW1	Injection	7/9/2003																		
	IRZMW2	Monitoring	7/9/2003																		
	IRZMW3	Monitoring	7/9/2003																		
	MW-7	Monitoring	7/9/2003																		
Progress Monitoring 10	IW1	Monitoring	7/16/2003																		
	IRZMW1	Monitoring	7/16/2003																		
	IRZMW2	Monitoring	7/16/2003																		
	IRZMW3	Monitoring	7/16/2003																		
	MW-7	Monitoring	7/16/2003																		
Progress Monitoring 11	IW1	Monitoring	7/23/2003	**18J**	<5	<5	<5	<5	<5	<5	**11J**	<5	<5	<5	**1J**	<5	<5	<5	<5	**22**	**2J**
	IRZMW1	Monitoring	7/23/2003	**1,480**	<5	<5	<5	<5	<5	<5	**240**	<5	<5	<5	**0.5J**	**12**	<5	<5	<5	**3J**	<5
	IRZMW2	Monitoring	7/23/2003																		
	IRZMW3	Monitoring	7/23/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	**44**	<5	<5	<5	**7**	<5
	MW-7	Monitoring	7/23/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	**37**	<5	<5	<5	**6**	<5
Progress Monitoring 12	IW1	Monitoring	7/31/2003																		
	IRZMW1	Monitoring	7/31/2003																		
	IRZMW2	Monitoring	7/31/2003																		
	IRZMW3	Monitoring	7/31/2003																		
	MW-7	Monitoring	7/31/2003																		
Well Redevelop-ment	IW1	Redevelop	8/13/2003																		
	IRZMW1	Redevelop	8/13/2003																		
	IRZMW2	Redevelop	8/13/2003																		
	IRZMW3																				
	MW-7																				
Injection Event	IW1	Injection	8/15/2003																		
	IRZMW1	Injection	8/15/2003																		
	IRZMW2																				
	IRZMW3																				
	MW-7																				
Progress Monitoring 13	IW1	Monitoring	8/22/2003																		
	IRZMW1	Monitoring	8/22/2003																		
	IRZMW2	Monitoring	8/22/2003																		
	IRZMW3	Monitoring	8/22/2003																		
	MW-7	Monitoring	8/22/2003																		
Progress Monitoring 14	IW1	Monitoring	8/25/2003																		
	IRZMW1	Monitoring	8/25/2003																		
	IRZMW2	Monitoring	8/25/2003																		
	IRZMW3	Monitoring	8/25/2003																		
	MW-7	Monitoring	8/25/2003																		
Progress Monitoring 15 and Sampling	IW1	Monitoring	9/4/2003	17J	<5	<5	<5	<5	<5	<5	5J	<5	<5	<5	<5	10	<5	<5	<5	8	<5
	IRZMW1	Monitoring	9/4/2003	13J	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	35	<5	<5	<5	11	<5
	IRZMW2	Monitoring	9/4/2003	26J	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	13	<5	<5	<5	6	<5
	IRZMW3	Monitoring	9/4/2003	14J	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	0.9J	63	<5	<5	<5	13	<5
	MW-7	Monitoring	9/4/2003	<50	<5	<5	<5	<5	<5	<5	<100	<5	<5	<5	<5	31	<5	<5	<5	6	<5

Table 7-2d. Summary of Demonstration Data, Volatile Organic Compounds (cont.)

				VOCs																	
				2-Chloro-toluene	4-Chloro-toluene	1,2-Dibromo-3-Chloro-propane	1,2-Dibromo-ethane (EDB)	Dibromo-methane	1,2-Dichloro-benzene	1,3-Dichloro-benzene	1,4-Dichloro-benzene	Dichloro-difluoro-methane	1,1-Dichloro-ethane	1,2-Dichloro-ethane	1,1-Dichloro-ethene	CIS 1,2-Dichloro-ethene	TRANS-1,2-Dichloro-ethene	1,2-Dichloro-propane	1,3-Dichloro-porpane	2,2-Dichloro-propane	1,1-Dichloro-propene
			Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Event	Well Location	Well Type	EPA Method Number:	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B
			Date																		
Baseline No Injection Lowflow Sampling	IW1	Monitoring	6/4/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**2 J**	<5	<5	<5	<5	<5	<5
	IRZMW1	Injection	2/21/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**11**	<5	<5	<5	<5	<5	<5
	IRZMW2	Monitoring	2/21/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	IRZMW3	Monitoring	2/21/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**8**	<5	<5	<5	<5	<5	<5
	MW-7	Monitoring	2/21/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**14**	<5	<5	<5	<5	<5	<5
Progress Monitoring 1	IW1	Monitoring	6/6/2003																		
	IRZMW1	Monitoring	6/6/2003																		
	IRZMW2	Monitoring	6/6/2003																		
	IRZMW3	Monitoring	6/6/2003																		
	MW-7	Monitoring	6/6/2003																		
Progress Monitoring 2	IW1	Monitoring	6/12/2003																		
	IRZMW1	Monitoring	6/12/2003																		
	IRZMW2	Monitoring	6/12/2003																		
	IRZMW3	Monitoring	6/12/2003																		
	MW-7	Monitoring	6/12/2003																		
Progress Monitoring 3 and Injection	IW1	Injection	6/18/2003																		
	IRZMW1	Injection	6/18/2003																		
	IRZMW2	Monitoring	6/18/2003																		
	IRZMW3	Monitoring	6/18/2003																		
	MW-7	Monitoring	6/18/2003																		
Progress Monitoring 4	IW1	Monitoring	6/20/2003																		
	IRZMW1	Monitoring	6/20/2003																		
	IRZMW2	Monitoring	6/20/2003																		
	IRZMW3	Monitoring	6/20/2003																		
	MW-7	Monitoring	6/20/2003																		
Progress Monitoring 5	IW1	Monitoring	6/23/2003																		
	IRZMW1	Monitoring	6/23/2003																		
	IRZMW2	Monitoring	6/23/2003																		
	IRZMW3	Monitoring	6/23/2003																		
	MW-7	Monitoring	6/23/2003																		
Progress Monitoring 6	IW1	Monitoring	6/25/2003																		
	IRZMW1	Monitoring	6/25/2003																		
	IRZMW2	Monitoring	6/25/2003																		
	IRZMW3	Monitoring	6/25/2003																		
	MW-7	Monitoring	6/25/2003																		
Progress Monitoring 7 and sampling	IW1	Monitoring	6/30/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**1 J**	<5	<5	<5	<5	<5	<5
	IRZMW1	Monitoring	6/30/2003	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	**2 J**	<25	<25	<25	<25	<25	<25
	IRZMW2	Monitoring	6/30/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**1 J**	<5	<5	<5	<5	<5	<5
	IRZMW3	Monitoring	6/30/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**3 J**	<5	<5	<5	<5	<5	<5
	MW-7	Monitoring	6/30/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**3 J**	<5	<5	<5	<5	<5	<5
Progress Monitoring 8	IW1	Monitoring	7/3/2003																		
	IRZMW1	Monitoring	7/3/2003																		
	IRZMW2	Monitoring	7/3/2003																		
	IRZMW3	Monitoring	7/3/2003																		
	MW-7	Monitoring	7/3/2003																		
Progress Monitoring 9 Injection	IW1	Injection	7/9/2003																		
	IRZMW1	Injection	7/9/2003																		
	IRZMW2	Monitoring	7/9/2003																		
	IRZMW3	Monitoring	7/9/2003																		
	MW-7	Monitoring	7/9/2003																		
Progress Monitoring 10	IW1	Monitoring	7/16/2003																		
	IRZMW1	Monitoring	7/16/2003																		
	IRZMW2	Monitoring	7/16/2003																		
	IRZMW3	Monitoring	7/16/2003																		
	MW-7	Monitoring	7/16/2003																		
Progress Monitoring 11	IW1	Monitoring	7/23/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	IRZMW1	Monitoring	7/23/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	IRZMW2	Monitoring	7/23/2003																		
	IRZMW3	Monitoring	7/23/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**3J**	<5	<5	<5	<5	<5	<5
	MW-7	Monitoring	7/23/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	**2J**	<5	<5	<5	<5	<5	<5
Progress Monitoring 12	IW1	Monitoring	7/31/2003																		
	IRZMW1	Monitoring	7/31/2003																		
	IRZMW2	Monitoring	7/31/2003																		
	IRZMW3	Monitoring	7/31/2003																		
	MW-7	Monitoring	7/31/2003																		
Well Redevelop-ment	IW1	Redevelop	8/13/2003																		
	IRZMW1	Redevelop	8/13/2003																		
	IRZMW2	Redevelop	8/13/2003																		
	IRZMW3																				
	MW-7																				
Injection Event	IW1	Injection	8/15/2003																		
	IRZMW1	Injection	8/15/2003																		
	IRZMW2																				
	IRZMW3																				
	MW-7																				
Progress Monitoring 13	IW1	Monitoring	8/22/2003																		
	IRZMW1	Monitoring	8/22/2003																		
	IRZMW2	Monitoring	8/22/2003																		
	IRZMW3	Monitoring	8/22/2003																		
	MW-7	Monitoring	8/22/2003																		
Progress Monitoring 14	IW1	Monitoring	8/25/2003																		
	IRZMW1	Monitoring	8/25/2003																		
	IRZMW2	Monitoring	8/25/2003																		
	IRZMW3	Monitoring	8/25/2003																		
	MW-7	Monitoring	8/25/2003																		
Progress Monitoring 15 and Sampling	IW1	Monitoring	9/4/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	IRZMW1	Monitoring	9/4/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	3J	<5	<5	<5	<5	<5	<5
	IRZMW2	Monitoring	9/4/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
	IRZMW3	Monitoring	9/4/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	4J	<5	<5	<5	<5	<5	<5
	MW-7	Monitoring	9/4/2003	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5

Table 7-2e. Summary of Demonstration Data, Volatile Organic Compounds (cont.)

				VOCs																	
				CIS-1,3-Dichloro-propene	TRANS-1,3-Dichloro-propene	Ethylbenzene	Hexachloro-butadiene	Isopropyl-benzene	P-Isopropyl-toluene	Methylene Chloride	4-Methyl-2-Pentanone (MIBK)	Methly-t-butyl Ether (MTBE)	Napthalene	N-Propyl-benzene	Styrene	1,1,1,2-Tetrachloro-ethane	1,1,2,2-Tetrachloro-ethane	Tetrachloro-ethene	Toluene	1,2,3-Trichloro-benzene	1,2,4-Trichloro-benzene
			Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Event	Well Location	Well Type	EPA Method Number:	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B
			Date																		
Baseline No Injection Lowflow Sampling	IW1	Monitoring	6/4/2003	<5	<5	<5	<5	<5	<5	<5	<50	<10	<5	<5	<5	<5	<5	**3 J**	**0.3 J**	<5	<5
	IRZMW1	Injection	2/21/2003	<5	<5	<5	<5	<5	<5	**0.7 J**	<50	<10	<5	<5	<5	<5	<5	**21**	<5	<5	<5
	IRZMW2	Monitoring	2/21/2003	<5	<5	<5	<5	<5	<5	<5	<50	<10	<5	<5	<5	<5	<5	<5	**0.8 J**	<5	<5
	IRZMW3	Monitoring	2/21/2003	<5	<5	<5	<5	<5	<5	<5	<50	<10	<5	<5	<5	<5	<5	**14**	<5	<5	<5
	MW-7	Monitoring	2/21/2003	<5	<5	<5	<5	<5	<5	**0.8 J**	<50	<10	<5	<5	<5	<5	<5	**25**	<5	<5	<5
Progress Monitoring 1	IW1	Monitoring	6/6/2003																		
	IRZMW1	Monitoring	6/6/2003																		
	IRZMW2	Monitoring	6/6/2003																		
	IRZMW3	Monitoring	6/6/2003																		
	MW-7	Monitoring	6/6/2003																		
Progress Monitoring 2	IW1	Monitoring	6/12/2003																		
	IRZMW1	Monitoring	6/12/2003																		
	IRZMW2	Monitoring	6/12/2003																		
	IRZMW3	Monitoring	6/12/2003																		
	MW-7	Monitoring	6/12/2003																		
Progress Monitoring 3 and Injection	IW1	Injection	6/18/2003																		
	IRZMW1	Injection	6/18/2003																		
	IRZMW2	Monitoring	6/18/2003																		
	IRZMW3	Monitoring	6/18/2003																		
	MW-7	Monitoring	6/18/2003																		
Progress Monitoring 4	IW1	Monitoring	6/20/2003																		
	IRZMW1	Monitoring	6/20/2003																		
	IRZMW2	Monitoring	6/20/2003																		
	IRZMW3	Monitoring	6/20/2003																		
	MW-7	Monitoring	6/20/2003																		
Progress Monitoring 5	IW1	Monitoring	6/23/2003																		
	IRZMW1	Monitoring	6/23/2003																		
	IRZMW2	Monitoring	6/23/2003																		
	IRZMW3	Monitoring	6/23/2003																		
	MW-7	Monitoring	6/23/2003																		
Progress Monitoring 6	IW1	Monitoring	6/25/2003																		
	IRZMW1	Monitoring	6/25/2003																		
	IRZMW2	Monitoring	6/25/2003																		
	IRZMW3	Monitoring	6/25/2003																		
	MW-7	Monitoring	6/25/2003																		
Progress Monitoring 7 and sampling	IW1	Monitoring	6/30/2003	<5	<5	<5	<5	<5	<5	**0.5 J**	<50	<10	<5	<5	<5	<5	<5	**0.4 J**	<5	<5	<5
	IRZMW1	Monitoring	6/30/2003	<25	<25	<25	<25	<25	<25	**7 J**	<250	<50	<25	<25	<25	<25	<25	<25	<25	<25	<25
	IRZMW2	Monitoring	6/30/2003	<5	<5	<5	<5	<5	<5	**0.4 J**	<50	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5
	IRZMW3	Monitoring	6/30/2003	<5	<5	<5	<5	<5	<5	<5	<50	<10	<5	<5	<5	<5	<5	**7**	<5	<5	<5
	MW-7	Monitoring	6/30/2003	<5	<5	<5	<5	<5	<5	<5	<50	<10	<5	<5	<5	<5	<5	**7**	<5	<5	<5
Progress Monitoring 8	IW1	Monitoring	7/3/2003																		
	IRZMW1	Monitoring	7/3/2003																		
	IRZMW2	Monitoring	7/3/2003																		
	IRZMW3	Monitoring	7/3/2003																		
	MW-7	Monitoring	7/3/2003																		
Progress Monitoring 9 Injection	IW1	Injection	7/9/2003																		
	IRZMW1	Injection	7/9/2003																		
	IRZMW2	Monitoring	7/9/2003																		
	IRZMW3	Monitoring	7/9/2003																		
	MW-7	Monitoring	7/9/2003																		
Progress Monitoring 10	IW1	Monitoring	7/16/2003																		
	IRZMW1	Monitoring	7/16/2003																		
	IRZMW2	Monitoring	7/16/2003																		
	IRZMW3	Monitoring	7/16/2003																		
	MW-7	Monitoring	7/16/2003																		
Progress Monitoring 11	IW1	Monitoring	7/23/2003	<5	<5	<5	<5	<5	<5	**0.7J**	<50	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5
	IRZMW1	Monitoring	7/23/2003	<5	<5	<5	<5	<5	<5	**0.4J**	**2J**	<10	<5	<5	<5	<5	<5	<5	<5	<5	<5
	IRZMW2	Monitoring	7/23/2003																		
	IRZMW3	Monitoring	7/23/2003	<5	<5	<5	<5	<5	<5	**0.4J**	<50	<10	<5	<5	<5	<5	<5	**6**	**2J**	<5	<5
	MW-7	Monitoring	7/23/2003	<5	<5	<5	<5	<5	<5	**0.4J**	<50	<10	<5	<5	<5	<5	<5	**5**	**0.5J**	<5	<5
Progress Monitoring 12	IW1	Monitoring	7/31/2003																		
	IRZMW1	Monitoring	7/31/2003																		
	IRZMW2	Monitoring	7/31/2003																		
	IRZMW3	Monitoring	7/31/2003																		
	MW-7	Monitoring	7/31/2003																		
Well Redevelop-ment	IW1	Redevelop	8/13/2003																		
	IRZMW1	Redevelop	8/13/2003																		
	IRZMW2	Redevelop	8/13/2003																		
	IRZMW3																				
	MW-7																				
Injection Event	IW1	Injection	8/15/2003																		
	IRZMW1	Injection	8/15/2003																		
	IRZMW2																				
	IRZMW3																				
	MW-7																				
Progress Monitoring 13	IW1	Monitoring	8/22/2003																		
	IRZMW1	Monitoring	8/22/2003																		
	IRZMW2	Monitoring	8/22/2003																		
	IRZMW3	Monitoring	8/22/2003																		
	MW-7	Monitoring	8/22/2003																		
Progress Monitoring 14	IW1	Monitoring	8/25/2003																		
	IRZMW1	Monitoring	8/25/2003																		
	IRZMW2	Monitoring	8/25/2003																		
	IRZMW3	Monitoring	8/25/2003																		
	MW-7	Monitoring	8/25/2003																		
Progress Monitoring 15 and Sampling	IW1	Monitoring	9/4/2003	<5	<5	<5	<5	<5	<5	<5	<50	<10	<5	<5	<5	<5	<5	1J	<5	<5	<5
	IRZMW1	Monitoring	9/4/2003	<5	<5	<5	<5	<5	<5	<5	<50	<10	<5	<5	<5	<5	<5	4J	<5	<5	<5
	IRZMW2	Monitoring	9/4/2003	<5	<5	<5	<5	<5	<5	<5	<50	<10	<5	<5	<5	<5	<5	1J	<5	<5	<5
	IRZMW3	Monitoring	9/4/2003	<5	<5	<5	<5	<5	<5	0.7J	<50	<10	<5	<5	<5	<5	<5	10	<5	<5	<5
	MW-7	Monitoring	9/4/2003	<5	<5	<5	<5	<5	<5	<5	<50	<10	<5	<5	<5	<5	<5	4J	0.8J	<5	<5

Table 7-2f. Summary of Demonstration Data, Volatile Organic Compounds (cont.)

				VOCs										
				1,1,1-Trichloro ethane	1,1,2-Trichloro ethane	Trichloro-ethene	Trichloro-fluoro-methane	1,2,3-Trichloro propane	1,2,4-Trimethyl-benzene	1,3,5-Trimethyl-benzene	Vinyl Chloride	O-Xylene	M/P-Xylene	Tert Butyl Alcohol (TBA)
			Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Event	Well Location	Well Type	EPA Method Number:	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B	8260B
			Date											
Baseline No Injection Lowflow Sampling	IW1	Monitoring	6/4/2003	<5	<5	**4 J**	<5	<5	<5	<5	<5	<5	<10	<20
	IRZMW1	Injection	2/21/2003	<5	<5	**13**	<5	<5	<5	<5	<5	<5	<10	
	IRZMW2	Monitoring	2/21/2003	<5	<5	**1 J**	<5	<5	<5	<5	<5	<5	<10	
	IRZMW3	Monitoring	2/21/2003	<5	<5	**10**	<5	<5	<5	<5	<5	<5	<10	
	MW-7	Monitoring	2/21/2003	<5	<5	**10**	<5	<5	<5	<5	<5	<5	<10	
Progress Monitoring 1	IW1	Monitoring	6/6/2003											
	IRZMW1	Monitoring	6/6/2003											
	IRZMW2	Monitoring	6/6/2003											
	IRZMW3	Monitoring	6/6/2003											
	MW-7	Monitoring	6/6/2003											
Progress Monitoring 2	IW1	Monitoring	6/12/2003											
	IRZMW1	Monitoring	6/12/2003											
	IRZMW2	Monitoring	6/12/2003											
	IRZMW3	Monitoring	6/12/2003											
	MW-7	Monitoring	6/12/2003											
Progress Monitoring 3 and Injection	IW1	Injection	6/18/2003											
	IRZMW1	Injection	6/18/2003											
	IRZMW2	Monitoring	6/18/2003											
	IRZMW3	Monitoring	6/18/2003											
	MW-7	Monitoring	6/18/2003											
Progress Monitoring 4	IW1	Monitoring	6/20/2003											
	IRZMW1	Monitoring	6/20/2003											
	IRZMW2	Monitoring	6/20/2003											
	IRZMW3	Monitoring	6/20/2003											
	MW-7	Monitoring	6/20/2003											
Progress Monitoring 5	IW1	Monitoring	6/23/2003											
	IRZMW1	Monitoring	6/23/2003											
	IRZMW2	Monitoring	6/23/2003											
	IRZMW3	Monitoring	6/23/2003											
	MW-7	Monitoring	6/23/2003											
Progress Monitoring 6	IW1	Monitoring	6/25/2003											
	IRZMW1	Monitoring	6/25/2003											
	IRZMW2	Monitoring	6/25/2003											
	IRZMW3	Monitoring	6/25/2003											
	MW-7	Monitoring	6/25/2003											
Progress Monitoring 7 and sampling	IW1	Monitoring	6/30/2003	<5	<5	**2 J**	<5	<5	<5	<5	<5	<5	<10	
	IRZMW1	Monitoring	6/30/2003	<25	<25	**3 J**	<25	<25	<25	<25	<25	<25	<50	
	IRZMW2	Monitoring	6/30/2003	<5	<5	**1 J**	<5	<5	<5	<5	<5	<5	<10	
	IRZMW3	Monitoring	6/30/2003	<5	<5	**5**	<5	<5	<5	<5	<5	<5	<10	
	MW-7	Monitoring	6/30/2003	<5	<5	**8**	<5	<5	<5	<5	<5	<5	<10	
Progress Monitoring 8	IW1	Monitoring	7/3/2003											
	IRZMW1	Monitoring	7/3/2003											
	IRZMW2	Monitoring	7/3/2003											
	IRZMW3	Monitoring	7/3/2003											
	MW-7	Monitoring	7/3/2003											
Progress Monitoring 9 Injection	IW1	Injection	7/9/2003											
	IRZMW1	Injection	7/9/2003											
	IRZMW2	Monitoring	7/9/2003											
	IRZMW3	Monitoring	7/9/2003											
	MW-7	Monitoring	7/9/2003											
Progress Monitoring 10	IW1	Monitoring	7/16/2003											
	IRZMW1	Monitoring	7/16/2003											
	IRZMW2	Monitoring	7/16/2003											
	IRZMW3	Monitoring	7/16/2003											
	MW-7	Monitoring	7/16/2003											
Progress Monitoring 11	IW1	Monitoring	7/23/2003	<5	<5	**0.5J**	<5	<5	<5	<5	<5	<5	<10	NA
	IRZMW1	Monitoring	7/23/2003	<5	<5	**0.4J**	<5	<5	<5	<5	<5	<5	<10	NA
	IRZMW2	Monitoring	7/23/2003											
	IRZMW3	Monitoring	7/23/2003	<5	<5	**4J**	<5	<5	<5	<5	<5	**0.5J**	**1J**	NA
	MW-7	Monitoring	7/23/2003	<5	<5	**4J**	<5	<5	<5	<5	<5	<5	**0.5J**	NA
Progress Monitoring 12	IW1	Monitoring	7/31/2003											
	IRZMW1	Monitoring	7/31/2003											
	IRZMW2	Monitoring	7/31/2003											
	IRZMW3	Monitoring	7/31/2003											
	MW-7	Monitoring	7/31/2003											
Well Redevelop-ment	IW1	Redevelop	8/13/2003											
	IRZMW1	Redevelop	8/13/2003											
	IRZMW2	Redevelop	8/13/2003											
	IRZMW3													
	MW-7													
Injection Event	IW1	Injection	8/15/2003											
	IRZMW1	Injection	8/15/2003											
	IRZMW2													
	IRZMW3													
	MW-7													
Progress Monitoring 13	IW1	Monitoring	8/22/2003											
	IRZMW1	Monitoring	8/22/2003											
	IRZMW2	Monitoring	8/22/2003											
	IRZMW3	Monitoring	8/22/2003											
	MW-7	Monitoring	8/22/2003											
Progress Monitoring 14	IW1	Monitoring	8/25/2003											
	IRZMW1	Monitoring	8/25/2003											
	IRZMW2	Monitoring	8/25/2003											
	IRZMW3	Monitoring	8/25/2003											
	MW-7	Monitoring	8/25/2003											
Progress Monitoring 15 and Sampling	IW1	Monitoring	9/4/2003	<5	<5	4J	<5	<5	<5	<5	<5			<20
	IRZMW1	Monitoring	9/4/2003	<5	<5	6	<5	<5	<5	<5	<5			<20
	IRZMW2	Monitoring	9/4/2003	<5	<5	3J	<5	<5	<5	<5	<5			<20
	IRZMW3	Monitoring	9/4/2003	<5	<5	7	<5	<5	<5	<5	<5			<20
	MW-7	Monitoring	9/4/2003	<5	<5	4J	<5	<5	<5	<5	<5			<20

Table 7-2g. Summary of Demonstration Data, Metals

				METALS																		
				Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
			Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Event	Well Location	Well Type	EPA Method Number:	6010B	6010B	6010B	6010B	6010B	6010B	6010B	6010B	6010B	6010B	6010B	7470A	6010B	6010B	6010B	6010B	6010B	6010B	6010B
			Date																			
Baseline No Injection Lowflow Sampling	IW1	Monitoring	6/4/2003	<10	7.9	435	<2	<2	846	29.7	163	100,000	37.7	1,010	0.32 J	90.1	696	3.1 J	49.1	<10	44.5	300
	IRZMW1	Injection	2/21/2003	<10	1.8 J	67.0	<2	<2	36.4	0.83 J	3.0 J	2,390	<5	204	0.041 J	24.5	18.2	<10	<10	3.6 J	5.6 J	111
	IRZMW2	Monitoring	2/21/2003	<10	<5	83.3	<2	<2	100	9.3	5.0 J	3,070	<5	90	0.045 J	22.9	64.8	<10	<10	4.9 J	7.5 J	22.7
	IRZMW3	Monitoring	2/21/2003	<10	8.5	149	<2	<2	141	13.2	30.7	22,400	5.6	663	0.22 J	45.6	82.2	3.3 J	<10	<10	30.3	481
	MW-7	Monitoring	2/21/2003	<10	<5	54.3	<2	<2	13.5	<5	<10	142	<5	2.2 J	0.028 J	7.8	6.5	2.9 J	<10	1.8 J	3.2 J	5.2 J
Progress Monitoring 1	IW1	Monitoring	6/6/2003																			
	IRZMW1	Monitoring	6/6/2003																			
	IRZMW2	Monitoring	6/6/2003																			
	IRZMW3	Monitoring	6/6/2003																			
	MW-7	Monitoring	6/6/2003																			
Progress Monitoring 2	IW1	Monitoring	6/12/2003																			
	IRZMW1	Monitoring	6/12/2003																			
	IRZMW2	Monitoring	6/12/2003																			
	IRZMW3	Monitoring	6/12/2003																			
	MW-7	Monitoring	6/12/2003																			
Progress Monitoring 3 and Injection	IW1	Injection	6/18/2003																			
	IRZMW1	Injection	6/18/2003																			
	IRZMW2	Monitoring	6/18/2003																			
	IRZMW3	Monitoring	6/18/2003																			
	MW-7	Monitoring	6/18/2003																			
Progress Monitoring 4	IW1	Monitoring	6/20/2003																			
	IRZMW1	Monitoring	6/20/2003																			
	IRZMW2	Monitoring	6/20/2003																			
	IRZMW3	Monitoring	6/20/2003																			
	MW-7	Monitoring	6/20/2003																			
Progress Monitoring 5	IW1	Monitoring	6/23/2003																			
	IRZMW1	Monitoring	6/23/2003																			
	IRZMW2	Monitoring	6/23/2003																			
	IRZMW3	Monitoring	6/23/2003																			
	MW-7	Monitoring	6/23/2003																			
Progress Monitoring 6	IW1	Monitoring	6/25/2003																			
	IRZMW1	Monitoring	6/25/2003																			
	IRZMW2	Monitoring	6/25/2003																			
	IRZMW3	Monitoring	6/25/2003																			
	MW-7	Monitoring	6/25/2003																			
Progress Monitoring 7 and sampling	IW1	Monitoring	6/30/2003																			
	IRZMW1	Monitoring	6/30/2003																			
	IRZMW2	Monitoring	6/30/2003																			
	IRZMW3	Monitoring	6/30/2003																			
	MW-7	Monitoring	6/30/2003																			
Progress Monitoring 8	IW1	Monitoring	7/3/2003																			
	IRZMW1	Monitoring	7/3/2003																			
	IRZMW2	Monitoring	7/3/2003																			
	IRZMW3	Monitoring	7/3/2003																			
	MW-7	Monitoring	7/3/2003																			
Progress Monitoring 9 Injection	IW1	Injection	7/9/2003																			
	IRZMW1	Injection	7/9/2003																			
	IRZMW2	Monitoring	7/9/2003																			
	IRZMW3	Monitoring	7/9/2003																			
	MW-7	Monitoring	7/9/2003																			
Progress Monitoring 10	IW1	Monitoring	7/16/2003																			
	IRZMW1	Monitoring	7/16/2003																			
	IRZMW2	Monitoring	7/16/2003																			
	IRZMW3	Monitoring	7/16/2003																			
	MW-7	Monitoring	7/16/2003																			
Progress Monitoring 11	IW1	Monitoring	7/23/2003																			
	IRZMW1	Monitoring	7/23/2003																			
	IRZMW2	Monitoring	7/23/2003																			
	IRZMW3	Monitoring	7/23/2003																			
	MW-7	Monitoring	7/23/2003																			
Progress Monitoring 12	IW1	Monitoring	7/31/2003																			
	IRZMW1	Monitoring	7/31/2003																			
	IRZMW2	Monitoring	7/31/2003																			
	IRZMW3	Monitoring	7/31/2003																			
	MW-7	Monitoring	7/31/2003																			
Well Redevelop-ment	IW1	Redevelop	8/13/2003																			
	IRZMW1	Redevelop	8/13/2003																			
	IRZMW2	Redevelop	8/13/2003																			
	IRZMW3																					
	MW-7																					
Injection Event	IW1	Injection	8/15/2003																			
	IRZMW1	Injection	8/15/2003																			
	IRZMW2																					
	IRZMW3																					
	MW-7																					
Progress Monitoring 13	IW1	Monitoring	8/22/2003																			
	IRZMW1	Monitoring	8/22/2003																			
	IRZMW2	Monitoring	8/22/2003																			
	IRZMW3	Monitoring	8/22/2003																			
	MW-7	Monitoring	8/22/2003																			
Progress Monitoring 14	IW1	Monitoring	8/25/2003																			
	IRZMW1	Monitoring	8/25/2003																			
	IRZMW2	Monitoring	8/25/2003																			
	IRZMW3	Monitoring	8/25/2003																			
	MW-7	Monitoring	8/25/2003																			
Progress Monitoring 15 and Sampling	IW1	Monitoring	9/4/2003	2.2J	<5	52.9	<2	<2	31.9	0.97J	10.4	300	4.0J	1140	0.33J	7.6	4.0J	<10	<10	2.5J	3.0J	17.8
	IRZMW1	Monitoring	9/4/2003	<10	2.4J	53.5	<2	<2	41.8	<5	16.3	1160	3.9J	829	0.24J	9.5	4.2J	1.5J	<10	1.8J	5.5J	12.9
	IRZMW2	Monitoring	9/4/2003	<10	<5	51.9	<2	<2	39.9	<5	12	656	2.6J	20	0.20J	8.6	7.5	2.5J	<10	<10	4.4J	25.2
	IRZMW3	Monitoring	9/4/2003	<10	<5	50.4	<2	<2	21.8	<5	6.7J	141	<5	181	0.16J	11.7	9.1	<10	<10	<10	2.7J	9.2J
	MW-7	Monitoring	9/4/2003	<10	<5	46.8	<2	<2	46.3	11.8	9.5J	280	<5	2.6J	0.13J	11.4	2.8J	<10	<10	<10	3.6J	8.2J

Table 7-3. Summary of CVOC Concentrations during IRZ Demonstration

Well	Location	Maximum observed reduction in CT (%)	Background to Final Round reduction in CT (%)	Maximum observed reduction in CF (%)	Background to final round, reduction in CF (%)	Peak Production in CF (%)
IW-1	Used as an injection well but located downgradient of another injection well	>86	72	33	11	244
IRZMW-1	Used as the most upgradient injection well	92	79	81	59	NA
IRZMW-2	Downgradient monitoring well	31	31	58	50	NA
IRZMW-3	Crossgradient well, only briefly influenced	65	50	68	41	NA
MW-7	Furthest downgradient monitoring well	87	87	78	78	NA

Table 8-1. Cost Savings for IRZ Technology Compared to Pump and Treat Systems

Location	Description	Target COCs	Actual/Projected Savings
Rogersville, Tennessee	Parts manufacturing for trucks	PCE, TCA	$200,000
Eastern Tennessee	Fuel facility	PCE, radionuclides	$1,500,000
Chattanooga, Tennessee	Former manufacturing facility	PCE	$500,000 (50%)
Northeastern New Jersey	Pharmaceutical	PCE	$6,000,000
Williamsport, Pennsylvania	Textron/manufacturing	Cr^{+6}, TCE, DCE, VC	$2,250,000 (75%)
Reading, Pennsylvania	Textile equipment	TCE, Cr^{+6}, Pb, Cd	$700,000 (70%)
Emeryville, California	Metal plating manufacturer	TCE, DCE, Cr^{+6}	$1,600,000 (80%)
Hampton, Iowa	Metal plating	Cr^{+6}	$500,000 (66%)
Dallas, Texas	Graphics	Cr^{+6}	$1,500,000 (75%)
Pennsylvania	Lord Corporation	CAHs	$6,400,000 (74%)
East Coast	Metal plating	CAHs, Cr^{6+}	$6,000,000

Table 8-2. Estimated IRZ Costs for a Hypothetical IRZ Application

WBS Number			DESCRIPTION	QTY	UOM	UNIT COST	COST $
33XXX			**HTRW CONSTRUCTION ACTIVITIES**				
331XX			**HTRW REMEDIAL ACTION (Capital and Operating)**				
	01		**MOBILIZATION AND PREPARATORY WORK**				
	01	01	Mobilization of Construction Equipment (Drilling Rig)	1	EA	$3,000	$3,000
	01	03	Submittals/Implementation Plans/Permits	1	EA	$30,000	$30,000
	01	--	Pilot Testing	1	EA	$75,000	$75,000
	02		**MONITORING, SAMPLING, TESTING, AND ANALYSIS**				
	02	04	Monitoring Wells - Installation	4	EA	$3,000	$12,000
	02	--	Injection Wells - Installation	25	EA	$3,000	$75,000
	02	--	Well Development	1	EA	$4,000	$4,000
	02	--	IDW Disposal (soil cuttings)	1	EA	$1,000	$1,000
	02	05	Sampling Groundwater				
	02	--	Quarterly (10 wells)	4	EA	$5,300	$21,200
	02	--	Semi-Annual (10 wells)	8	EA	$5,300	$42,400
	02	06	Sampling Soil	1	EA	$3,000	$3,000
	02	09	Laboratory Chemical Analysis	12	EA	$3,600	$43,200
	11		**BIOLOGICAL TREATMENT**				
	11	04	In-Situ Biodegradation/Bioreclamation				
	11	--	Trailer-Mounted Molasses Injection System	1	EA	$10,000	$10,000
	11	--	Monthly Molasses Injections - Labor	24	EA	$2,250	$54,000
	11	--	Bi-Monthly Molasses Injections - Labor	18	EA	$2,250	$40,500
	11	--	Field Process Monitoring - Equipment	42	EA	$200	$8,400
	11	--	Field Process Monitoring - Analytical	42	EA	$200	$8,400
	11	--	Laboratory Chemical Analysis (TOC)	100	EA	$30	$3,000
	11	--	Molasses (20 gallons per well per injection)	21000	GAL	$3	$63,000
	11	--	Water for Injection (180 gallons per well per injection)	189000	GAL	$0.0029	$548
	11	--	Well Rehabilitation	63	EA	$300	$18,900
	11	--	Progress Reporting	5	YR	$25,000	$125,000
	11	--	Completion Report	1	EA	$20,000	$20,000
	21		**DEMOBILIZATION**				
	21	--	Well Abandonment	35	EA	$500	$17,500
	--		INDIRECT ENVIRONMENTAL ACTIVITY COSTS				
	--	--	Environmental and Safety Training	2	FTE	$250	$500
	--	--	OSHA Ambient Environment Sampling	1	EA	$250	$250
	--	--	Waste Manifesting	1	EA	$500	$500
			TOTAL AMOUNT FOR HYPOTHETICAL SITE				$680,298

Table 8-3. Estimated IRZ Costs for a Hypothetical IRZ Application

Site	Estimated Capital Costs	Estimated Annual O&M Costs	Actual or Predicted Costs to Closure	Initial Concentration	Dimensions
Industrial Laundry/Dry Cleaning Facility, Eastern PA	$75,000	$45,000	$250,000	46,000 ug/l PCE	10,000 ft^2 x 20 ft deep
Uranium Processing Facility, Eastern US	$480,000	$65,000	$760,000	5 - 14,000 ug/l PCE (plus U)	19.3 acres or 1200 x 700 ft
Former Metal Pating Site, Western US[1]	$100,000	$150,000	$250,000	24,000 ug/l TCE (plus Cr)	< 2 acres or <87,000 ft^2 x 10 feet deep
Industrial Manufacturing Site, South Carolina	$1,400,000	$75,000	$2,000,000	800 ug/l CT, chloroform, TCE	3.25 acres or 141,600 ft^2 x 10 ft deep
Industrial Site, Northeastern US	$150,000	$80,000	$750,000	120 ug/L PCE	3000 ft long in bedrock - depth varies
Former Dry Cleaner, Wisconsin[2]	$200,000	$100,000	$400,000	1,500-4,000 ug/L PCE	30,000 ft^2 x 5 ft deep
Former Automotive Manufacturing Site, Midwestern, US	$75,000	$60,000	$375,000	800 ug/l TCE	1000 x 400 ft x 20 ft deep
AOC 50, Ft. Devens, Ayer, Massachusetts	$150,000	$150,000	NA[3]	4,000 ug/L PCE	3000 x 400 ft x 40 ft deep

Note:
All costs presented in current dollars.
1 - Site has received regulatory closure.
2 - Site has received regulatory closure.
3 - No Predicted Costs to Closure Available. Pilot study ongoing.