Appendix A

Superfund Treatment Technologies by Fiscal Year

Superfund Remedial Actions:
Treatment Technologies by Fiscal Year

Technology Type	Fiscal Year															
Ex Situ Source Control Technologies	**1982-85**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**TOTALS**
Solidification/Stabilization	3	3	6	7	9	13	20	20	9	11	2	5	3	15	11	137
Incineration (off-site)	3	3	3	7	10	15	11	7	9	5	7	5	3	1	5	94
Thermal Desorption	2	1	4	4	3	7	9	3	5	5	4	1	5	6	2	61
Bioremediation	1	1	0	3	6	2	1	8	3	4	6	4	0	3	7	49
Incineration (on-site)	3	3	4	7	7	3	3	3	1	1	2	1	4	0	0	42
Chemical Treatment	1	0	1	0	0	1	1	1	0	0	1	1	0	0	3	10
Neutralization	0	0	0	1	0	0	0	4	0	0	2	0	0	0	0	7
Soil Washing	0	0	0	0	1	3	0	1	0	0	0	0	0	1	0	6
Mechanical Soil Aeration	1	0	0	1	0	1	0	0	0	0	1	0	0	0	1	5
Soil Vapor Extraction	0	0	0	0	0	0	0	0	2	1	0	0	0	1	1	5
Solvent Extraction	0	0	0	0	0	0	1	0	1	1	1	0	0	0	0	4
Open Burn/Open Detonation	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	2
Vitrification	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2
Physical Separation	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
TOTALS	14	11	19	30	36	46	46	47	31	29	27	17	15	27	30	425

In Situ Source Control Technologies	**1982 - 85**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**TOTALS**
Soil Vapor Extraction	4	2	1	8	21	17	32	16	19	6	9	21	18	9	13	196
Solidification/Stabilization	0	2	3	3	3	3	2	7	6	0	2	6	4	3	2	46
Bioremediation	0	0	1	1	0	3	1	3	4	4	3	6	0	7	2	35
Soil Flushing	1	1	0	0	4	1	2	1	2	3	0	0	0	0	1	16
Thermally Enhanced Recovery	0	0	0	0	0	0	1	0	0	1	0	2	0	1	1	6
Chemical Treatment	0	0	0	0	0	0	1	0	0	0	0	0	1	1	2	5
Phytoremediation	0	0	0	0	0	0	0	0	0	0	0	1	0	2	2	5
Dual-Phase Extraction	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	3
Electrical Separation	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Vitrification	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
TOTALS	6	5	5	12	28	24	40	27	31	14	14	36	23	24	25	314

In Situ Groundwater Technologies	**1982 - 85**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**TOTALS**
Air Sparging	0	1	0	0	1	0	8	3	5	1	2	7	8	5	7	48
Bioremediaiton	1	0	0	0	3	3	1	1	3	1	1	1	1	2	3	21
Dual-Phase Extraction	0	0	0	0	0	0	0	0	1	2	1	1	4	1	0	10
Permeable Reactive Barrier	0	0	0	0	0	0	0	3	0	1	0	0	1	3	0	8
Phytoremediation	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	4
Chemical Treatment	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2
In-Well Air Stripping	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2
TOTALS	1	1	0	0	4	3	9	7	10	5	5	9	14	15	12	95

Appendix B

Superfund Treatment Technology Summary Matrix

This appendix does not appear in the printed version of Treatment Technologies for Site Cleanup: Annual Status Report (Tenth Edition). This appendix is available in the on-line version of this report at http://*clu-in.org/asr*.

REGION 1
Source Control Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE: Source Control / Ex Situ: Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	In Situ: Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	STATUS
Kellogg-Deering Well Field	CT	1989	Remedial																				♦					O
Linemaster Switch Corporation	CT	1993	Remedial																				♦					O
Baird & Mcguire - OU 2 (Soil)	MA	1986	Remedial				♦																					C
Baird & Mcguire - OU 3 (Sediments)	MA	1989	Remedial				♦																					C
Cannon Engineering - Bridgewater OU	MA	1988	Remedial												♦													C
Groveland Wells	MA	1988	Remedial																				♦					O
Otis Air National Guard Area of Contamination CS16 and CS17 OU11	MA	1999	Remedial										♦															PD
Otis Air National Guard Fuel Spill No 9 OU10	MA	1999	Remedial										♦															PD
Otis Air National Guard OU 8	MA	1999	Remedial										♦															PD
PSC Resources	MA	1992	Remedial										♦															C
Re-Solve, Inc.	MA	1987	Remedial												♦													C
Rose Disposal Pit	MA	1988	Remedial				♦																					C
Silresim Chemical	MA	1991	Remedial																				♦					O
W.R. Grace (Acton Plant) And Co., Inc.	MA	1989	Remedial			♦																						C
W.R. Grace (Acton Plant) And Co., Inc.	MA	1989	Remedial										♦															C
Wells G&H - OU 1 (New England Plastics)	MA	1989	Remedial																				♦					O
Wells G&H - OU 1 (Wildwood Conservation Trust)	MA	1989	Remedial																				♦					O
Wells G&H - OU 1 (Wildwood Conservation Trust)	MA	1991	Remedial			♦																						C
Loring AFB - OU 10, Entomology Shop	ME	1995	Removal																				♦					O
Loring AFB - OU 11 Fuel Tanks Farm LI	ME	1995	Removal															♦										O
Loring AFB - OU 11, Base Laundry	ME	1996	Removal																				♦					O
Loring AFB - OU 11, Fuels Tank Farm (FTF)	ME	1995	Removal															♦										O
Loring AFB - OU 5, Base Exchange Service Station	ME	1995	Removal															♦										O
Loring AFB - OU 5, Former Jet Engine Test Cell	ME	1995	Removal															♦										O
Loring AFB - OU 5, Nose Dock Area 6	ME	1995	Removal															♦										O

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NA - Information on the date of the action is not currently available.

REGION 1
Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE																						STATUS
				Source Control																						
				Ex Situ														In Situ								
				Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	
Loring AFB - OU 5, Nose Dock Area 1	ME	1995	Removal														♦									O
Loring AFB - OU 5, Nose Dock Area 2	ME	1995	Removal														♦									O
Loring AFB - OU 5, Nose Dock Area 3	ME	1995	Removal														♦									O
Loring AFB - OU 5, Nose Dock Area 4	ME	1995	Removal														♦									O
Loring AFB - OU 5, Nose Dock Area 5	ME	1995	Removal														♦									O
Loring AFB - OU 5, Nose Dock Area 7	ME	1995	Removal														♦									O
Loring AFB - OU 5, Nose Dock Area 8	ME	1995	Removal														♦									O
Loring AFB - OU 8, Fire Training Area	ME	1995	Removal														♦									C
Loring AFB - OU 9, Auto Hobby Shop Area	ME	1995	Remedial														♦									O
Loring AFB - OU 9, Power Plant Drainage Pipe (PDDP)/ Former Vehicle Maintenance Motor Pool	ME	1995	Removal														♦									C
Mckin Co.	ME	1985	Remedial												♦											C
Pinette's Salvage Yard - Amendment	ME	1993	Remedial			♦																				C
Union Chemical - OU 1	ME	1994	Remedial																				♦			O
Fletchers Paint Works & Storage - OU 01	NH	1998	Remedial												♦											PD
Kearsarge Metallurgical Corp.	NH	1990	Remedial			♦																				C
Mottolo Pig Farm	NH	1991	Remedial																				♦			C
New Hampshire Plating Co. - OU 01	NH	1998	Remedial															♦								PD
Ottati & Goss/Kingston Steel Drum	NH	1987	Remedial												♦											C
Ottati & Goss/Kingston Steel Drum - OU 4	NH	1987	Remedial												♦											PD
Pease Air Force Base - Site 45	NH	1995	Remedial																				♦			O
Pease Air Force Base - Site 8	NH	1994	Remedial																				♦			O
Pease Air Force Base - Zone 2	NH	1995	Remedial																				♦			O
Savage Municipal Water Supply - OU 1, OK Tool Source Area	NH	1997	Remedial																				♦			O
Sylvester Dump	NH	1983	Remedial																				♦			C
Tibbetts Road	NH	1992	Remedial																				♦			C

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REGION 1

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE: Source Control – Ex Situ: Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	In Situ: Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	STATUS
Tinkham Garage - OU 1	NH	1986	Remedial																				♦					C
Davis Liquid Waste	RI	1996	Remedial												♦													BI
Davisville Naval Construction Battalion Center	RI	1993	Remedial			♦																						C
Peterson/Puritan Inc. - OU 1, CCL Area	RI	1993	Remedial																				♦					O
Picillo Farm Site	RI	1993	Remedial																				♦					BI
Stamina Mills	RI	1990	Remedial																				♦					O

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REGION 2
Source Control Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
A O Polymer - Soil Treatment Phase	NJ	1991	Remedial																				♦					O
American Cyanamid Co. - Group I Impoundments (11, 13, 19, And 24)	NJ	1993	Remedial																					♦				O
American Cyanamid Co. - Group II Impoundments (15, 16, 17, And 18)	NJ	1996	Remedial										♦															PD
Asbestos Dump - New Vernon Road and White Bridge Road Cleanup	NJ	1991	Remedial																					♦				C
Bog Creek Farm - OU 1	NJ	1985	Remedial				♦																					C
Bog Creek Farm - OU 2	NJ	1989	Remedial				♦																					C
Bridgeport Rental & Oil Services	NJ	1985	Remedial				♦																					C
Caldwell Trucking - Amendment	NJ	1995	Remedial																					♦				C
Caldwell Trucking - OU 1	NJ	1993	Remedial			♦																						C
Caldwell Trucking - OU 1	NJ	1995	Remedial																				♦					C
Chemical Control	NJ	1987	Remedial										♦															C
Cosden Chemical Coatings	NJ	1998	Remedial										♦															PD
Cosden Chemical Coatings	NJ	1998	Remedial																				♦					PD
Curcio Scrap Metal, Inc.	NJ	1991	Remedial			♦																						C
Dayco Corp./L.E. Carpenter Co., NJ	NJ	1994	Remedial															♦										O
Ewan Property - OU 1	NJ	1988	Remedial			♦																						C
FAA Technical Center - Area 20 A (Salvage Yard)	NJ	1990	Remedial			♦																						O
FAA Technical Center - Area B Navy Fire Testing Facility	NJ	1996	Remedial																				♦					PD
FAA Technical Center - OU 1, Area D - Jet Fuel Farm	NJ	1989	Remedial																				♦					O
Federal Creosote Site OU 1	NJ	1999	Remedial			♦																						PD
Garden State Cleaners	NJ	1991	Remedial																				♦					C
Industrial Latex - OU 1	NJ	1992	Remedial												♦													O
King Of Prussia	NJ	1990	Remedial									♦																C

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REGION 2

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Lipari Landfill	NJ	1985	Remedial																♦									BI
Lipari Landfill - OU 2	NJ	1985	Remedial																			♦						O
Lipari Landfill Marsh Sediment - OU 3	NJ	1988	Remedial												♦													C
Metaltec/Aerosystems - OU 1	NJ	1986	Remedial												♦													C
Myers Property	NJ	1990	Remedial									♦																PD
Myers Property	NJ	1990	Remedial		♦																							PD
Myers Property	NJ	1990	Remedial												♦													PD
Nascolite Corporation - OU 2	NJ	1991	Remedial										♦															BI
Naval Air Engineering Center - OU 23	NJ	1993	Remedial																				♦					O
Naval Air Engineering Center - Site 16 Under Area C	NJ	1996	Remedial															♦										O
Naval Air Engineering Center - Site 17 Under Area C	NJ	1996	Remedial																				♦					O
Naval Air Engineering Station, Site 28	NJ	1997	Remedial																				♦					O
Naval Weapons Station Earle (Site A) - OU 03	NJ	1998	Remedial																				♦					PD
NL Industries, Inc.	NJ	1991	Remedial										♦															C
NL Industries, Inc. - OU 1	NJ	1994	Remedial										♦															PD
Pulverizing Services OU1-Incineration	NJ	1999	Remedial			♦																						O
Pulverizing Services OU1-Thermal Desorption	NJ	1999	Remedial												♦													O
Reich Farm	NJ	1988	Remedial												♦													C
South Jersey Clothing Company	NJ	1991	Remedial																				♦					O
Swope Oil & Chemical	NJ	1985	Remedial			♦																						C
Swope Oil & Chemical - OU 2	NJ	1991	Remedial																				♦					O
Universal Oil Products	NJ	1993	Remedial								♦																	O
Vineland Chemical Co., Inc.	NJ	1992	Removal																♦									C
Vineland Chemical Co., Inc. - OU 1	NJ	1989	Remedial																			♦						PD
Vineland Chemical Co., Inc. - OU 3 & 4	NJ	1989	Remedial									♦																BI
Waldick Aerospace Devices, Inc.	NJ	1991	Remedial										♦															C

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REGION 2

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE																							STATUS
				Source Control																							
				Ex Situ															In Situ								
				Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	
Waldick Aerospace Devices, Inc. - OU 1	NJ	1987	Remedial												♦												C
Williams Property	NJ	1987	Remedial			♦																						C
Woodland Route 532 Dump (Amendment)	NJ	1999	Remedial																				♦					PD
Woodland Routes 72 Dump (Amendment)	NJ	1999	Remedial																				♦					PD
American Thermostat Co.	NY	NA	Removal																				♦					C
American Thermostat Co. - Phase 1	NY	1990	Remedial												♦													C
American Thermostat Co. - Phase 2	NY	1997	Remedial												♦													C
Brookhaven National Laboratory (USDOE) - OU 4	NY	1996	Remedial																				♦					O
Byron Barrel & Drum - OU 1/02	NY	1989	Remedial																			♦						PD
Claremont Polychemical - Soil Remedy	NY	1990	Remedial												♦													C
Facet Enterprises	NY	1992	Remedial											♦														C
FMC Corp. (Dublin Road)	NY	1993	Remedial											♦														C
Fulton Terminals - Soil Treatment	NY	1989	Remedial												♦													C
GCL Tie And Treating - OU 1	NY	1994	Remedial												♦													O
General Motors/Central Foundry Division - OU 1 & OU 2	NY	1992	Remedial												♦													PD
Genzale Plating Company - OU 1	NY	1991	Remedial																				♦					C
Hooker (102nd Street Landfill) - Amendment	NY	1995	Remedial			♦																						O
Hooker Chemical/Ruco Polymer	NY	1990	Remedial			♦																						C
Hooker Chemical/Ruco Polymer - OU 1	NY	1994	Remedial																			♦						PD
Kentucky Avenue Wellfield - OU 3	NY	1996	Remedial																				♦					PD
Lehigh Valley Railroad Derailment OU1	NY	1999	Remedial								♦																	PD
Love Canal - 05	NY	1997	Remedial			♦																						C
Marathon Battery Corp. - Areas I, II, And III	NY	1986	Remedial											♦														C
Mattiace Petrochemicals - OU 2	NY	1990	Remedial			♦																						C
Mattiace Petrochemicals - OU 3 and 4	NY	1991	Remedial																				♦					O
Olean Well Field - OU 2, Alcas Property	NY	1996	Remedial																				♦					PD

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REGION 2

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Pasley Solvents And Chemicals, Inc.	NY	1992	Remedial																				♦					O
Plattsburgh AFB - Bldg. 2774, SS-017	NY	1996	Removal																				♦					O
Plattsburgh AFB - Bldg. 2774, SS-017	NY	1996	Removal															♦										O
Plattsburgh AFB - Fire Training Area, Ft-002	NY	1996	Removal																				♦					O
Plattsburgh AFB - Fire Training Area, Ft-002	NY	1996	Removal															♦										O
Preferred Plating Corp. - OU 2	NY	1992	Remedial											♦														C
Reynolds Metals Company Study Area, (RMC)	NY	1993	Remedial			♦																						PD
Robintech, Inc./National Pipe Company	NY	1997	Remedial												♦													PD
Sarney Farm	NY	1990	Remedial												♦													C
Sealand Restoration, Inc.	NY	1990	Remedial			♦																						C
Seneca Army Depot Activity (SEDA) - Ash Landfill OU	NY	NA	Removal												♦													C
Seneca Army Depot Activity (SEDA) Open Burning Grounds OU2	NY	1999	Remedial											♦														O
Shore Realty (Formerly Applied Environmental Services) - OU 1	NY	1991	Remedial																				♦					O
Signo Trading/Mt. Vernon	NY	1987	Removal		♦																							C
Sinclair Refinery - OU 2	NY	1991	Remedial																				♦					O
SMS Instrument	NY	1989	Remedial																				♦					C
SMS Instruments (Deer Park)	NY	1989	Remedial																				♦					C
Solvent Savers	NY	1990	Remedial																				♦					O
Stanton Cleaners Area Groundwater Contamination OU1	NY	1999	Remedial																				♦					O
Vestal Water Supply	NY	1990	Remedial																				♦					O
Wide Beach Development	NY	1985	Remedial		♦																							C
Wide Beach Development Site Thermal Desorption	NY	1985	Remedial												♦													C
York Oil Co. - OU 02	NY	1998	Remedial											♦														BI
York Oil Co. - OU 1	NY	1988	Remedial											♦														O

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REGION 2

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE																						STATUS
				Source Control																						
				Ex Situ															In Situ							
				Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	
York Oil Co. - OU 1	NY	1988	Removal			♦																				C
GE Wiring Devices	PR	1988	Remedial			♦																				PD
Janssen Inc.	PR	1993	Remedial																				♦			O
Upjohn Manufacturing Co.	PR	1988	Remedial																				♦			C
Vega Alta Public Supply Wells - OU 2, PRIDCO Industrial Park	PR	1997	Remedial																				♦			PD
Tutu Well Field - Dept Of Education	VI	1996	Remedial																				♦			PD
Tutu Well Field - Esso	VI	1996	Remedial																				♦			O
Tutu Well Field - O' Henry	VI	1996	Remedial																				♦			PD
Tutu Well Field - Texaco	VI	1996	Remedial																				♦			O

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REGION 3

Source Control Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Delaware Sand & Gravel Landfill	DE	1993	Remedial								♦																	O
Delaware Sand & Gravel Landfill - OU 4 And OU 5	DE	1993	Remedial															♦										O
Dover AFB - Lindane Source Area Within Area 6	DE	1995	Remedial			♦																						C
Dover AFB - OU 14	DE	1998	Remedial												♦													C
Dover AFB - Target Area 3 Of Area 6	DE	1995	Remedial															♦										D/BI
Dover Gas Light Co.	DE	1994	Remedial			♦																						C
Dover Gas Light Co. - OU 01	DE	1998	Remedial																				♦					PD/D
Dover Gas Light Co. - OU 01	DE	1998	Remedial			♦																						PD/D
Halby Chemical Co. - OU 1, Process Plant Area	DE	1991	Remedial																♦									C
NCR Corporation	DE	1991	Remedial																				♦					O
Standard Chlorine Of Delaware, Inc.	DE	1995	Remedial	♦																								PD/D
Wildcat Landfill - OU 1, Landfill Proper And Adjacent Areas	DE	1988	Remedial			♦																						C
Aberdeen Proving Ground (Edgewood Area) J-Field Soil OU	MD	1996	Remedial																		♦							O
Eastern Maryland Wood Treating - Creosote Contaminated Soil OU	MD	1994	Removal	♦																								C
Patuxent River Naval Air Station OU 1 Soils, Pesticide Shop Site 17	MD	1999	Remedial			♦																						O
Southern Maryland Wood Treating (Amendment)	MD	1995	Remedial												♦													O
Avco Lycoming	PA	1997	Remedial																				♦					PD/D
Bendix Flight Systems Division	PA	1988	Remedial					♦																				C
Boarhead Farm	PA	1999	Remedial					♦																				D/BI
Boarhead Farm	PA	1999	Remedial																		♦							D/BI
Brodhead Creek - OU 1	PA	1991	Remedial																						♦			C
Bruin Lagoon	PA	1982	Remedial										♦															C
Burgess Brothers Landfill - OU 01	PA	1998	Remedial																				♦					D/BI
C&D Recycling	PA	1992	Remedial																						♦			C

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REGION 3

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Craig Farm Drum	PA	1989	Remedial										♦															C
Douglassville Disposal	PA	1989	Remedial										♦															PD/D
Drake Chemical - Phase III, OU 3	PA	1988	Remedial				♦																					C
Eastern Diversified Metals	PA	1991	Remedial										♦															PD/D
Eastern Diversified Metals	PA	1991	Remedial			♦																						O
Hebelka Auto Salvage Yard	PA	1989	Remedial										♦															C
Hunterstown Road	PA	1993	Remedial										♦															PD/D
Jacks Creek/Sitkin Smelting And Refining	PA	1997	Remedial																				♦					PD/D
Letterkenny Army Depot (SE Area) - Former Solvent Disposal Lagoon/Earthen	PA	1991	Remedial										♦															C
Letterkenny Army Depot (SE Area) - OU 1, K-Area	PA	1991	Remedial												♦													C
Lord-Shope Landfill	PA	1990	Remedial																				♦					O
M.W. Manufacturing	PA	1998	Remedial										♦															PD/D
MW Manuafacturing - Carbon Waste Pile	PA	1989	Remedial			♦																						C
MW Manufacturing - OU 05	PA	1998	Remedial												♦													PD/D
Paoli Rail Yard	PA	1992	Remedial										♦															PD/D
Publicker Industries, Inc. - OU 3	PA	1996	Remedial			♦																						C
Raymark	PA	1992	Remedial																				♦					C
Revere Chemical Co. - OU 1	PA	1994	Remedial								♦																	C
Saegertown Industrial Area	PA	1993	Remedial																				♦					PD/D
Saegertown Industrial Area - Former Gatx Property	PA	1995	Remedial			♦																						C
Tonolli Corp	PA	1999	Remedial	♦																								PD/D
Tonolli Corp.	PA	1992	Remedial										♦															C
Tysons Dump	PA	1988	Remedial																				♦					C
Westline	PA	1986	Remedial			♦																						C
Whitmoyer Laboratories - OU 04 and OU 5	PA	1998	Remedial										♦															C

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REGION 3

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE: Source Control / Ex Situ: Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	In Situ: Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	STATUS
Whitmoyer Laboratories - OU 1	PA	1989	Remedial			♦																						C
Whitmoyer Laboratories - OU 2 (Bldg Structures)	PA	1991	Remedial										♦															C
Whitmoyer Laboratories - OU 2 (Bldg Structures, Vault OU 4 UVW, And Lagoon Sludges OU 5)	PA	1995	Remedial			♦																						C
Whitmoyer Laboratories - OU 3	PA	1991	Remedial										♦															PD/D
Whitmoyer Laboratories - OU 3	PA	1991	Remedial												♦													PD/D
William Dick Lagoons - OU 3	PA	1993	Remedial												♦													PD/D
Abex Corporation OU 1 - Inner Focus Area	VA	1992	Remedial										♦															O
Arrowhead Associates/Scovillcorp. - OU 1	VA	1991	Remedial																				♦					PD/D
Atlantic Wood Industry - OU 1	VA	1995	Remedial	♦																								PD/D
Avtex Fibers	VA	1990	Removal																♦									C
C&R Battery Co., Inc.	VA	1990	Remedial										♦															C
Defense General Supply Center (DLA) - OU 5	VA	1992	Remedial																				♦					C
Dixie Cavern County Landfill	VA	1991	Remedial			♦																						C
First Piedmont Rock Quarry (Route 719)	VA	1991	Remedial										♦															O
Greenwood Chemical Co. - OU 1	VA	1990	Remedial			♦																						C
H & H Burn Pit	VA	1999	Remedial																	♦								O
Naval Surface Warfare Center, Dahlgren, Site 12 - Chemical Burn Area	VA	1997	Remedial																				♦					O
Naval Surface Warfare Center, Site 17	VA	1998	Remedial																			♦						PD/D
Naval Weapons Station - Yorktown - OU 03	VA	1998	Remedial	♦																								O
Naval Weapons Station OU2	VA	1999	Remedial	♦																								O
Naval Weapons Station -Yorktown OU 13	VA	1999	Remedial	♦																								O
Rhinehart Tire Fire Dump	VA	1999	Remedial		♦																							O
Rhinehart Tire Fire Dump	VA	1992	Remedial										♦															C
Saunders Supply Co. - Amendment	VA	1996	Remedial			♦																						C
Fike Chemical, Inc. - OU 1	WV	1988	Removal			♦																						C

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REGION 3

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Fike Chemical, Inc. - OU 3 - Drum Removal	WV	1992	Remedial			♦																						C
Ordnance Works Disposal Areas OU 1	WV	1999	Remedial												♦													PD/D
West Virginia Ordnance (USArmy)	WV	1987	Remedial						♦																			C

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REGION 4

Source Control Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Alabama Army Ammunition Plant, Area A, Study Area 12 And D - OU 3	AL	1994	Remedial				♦																					C
Alabama Army Ammunition Plant, Area B, Stockpile Soil - OU 1	AL	1992	Remedial				♦																					C
Alabama Army Ammunition Plant, Area B, Study Area 6, 7, 10, 21 - OU 2	AL	1995	Remedial				♦																					C
Alabama Army Ammunition Plant, Area B, Study Areas 5, 10, 16, 19, OU 6	AL	1992	Remedial										♦															O
Alabama Army Ammunition Plant, Area B, Study Areas 5, 10, 16, 19, OU 6	AL	1997	Remedial				♦																					C
Alabama Army Ammunition Plant, OU 5	AL	1997	Remedial			♦																						C
Alabama Army Ammunition Plant, OU 5	AL	1997	Remedial										♦															C
Ciba Geigy (Mcintosh Plant) - OU 2	AL	1991	Remedial				♦																					C
Ciba Geigy (Mcintosh Plant) - OU 4	AL	1992	Remedial				♦																					C
Interstate Lead Co.	AL	1991	Remedial										♦															D/BI
Mowbray Engineering	AL	1986	Remedial																						♦			C
Stauffer Chemical (Cold Creek Plant) - OU2	AL	1995	Remedial	♦																								O
Stauffer Chemical LeMoyne Plant OU 2	AL	1999	Remedial																			♦						PD/D
T.H. Agriculture & Nutrition (Montgomery - OU 02)	AL	1998	Remedial	♦																								PD/D
Walker Springs Wood Treater	AL	NA	Removal	♦																								C
62nd Street Dump	FL	1990	Remedial																						♦			C
Agrico Chemical	FL	1992	Remedial										♦															C
Airco Plating Company, OU 1	FL	1994	Remedial																				♦					O
Brown Wood Preserving	FL	1988	Remedial	♦																								C
Cabot/Koppers - Koppers OU	FL	1990	Remedial										♦															PD/D
Cabot/Koppers - Koppers OU	FL	1990	Remedial	♦																								PD/D
Cabot/Koppers - Koppers OU	FL	1990	Remedial															♦										PD/D

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REGION 4

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Cabot/Koppers - Koppers OU	FL	1990	Remedial									♦																PD/D
Cecil Field Naval Air Station - OU 2, Site 17	FL	1994	Remedial												♦													C
Cecil Field Naval Air Station - OU7, Site 16, SVE	FL	1999	Remedial																				♦					O
Coleman-Evans Wood Preserving - Amendment	FL	1997	Remedial												♦													D/BI
Davie Landfill	FL	1985	Remedial										♦															C
Dubose Oil Products Co.	FL	1990	Remedial	♦																								C
Florida Steel Corp. - OU 2	FL	1994	Remedial										♦															C
Helena Chemical Company (Tampa Plant)	FL	1996	Remedial															♦										PD/D
Hollingsworth Solderless	FL	1986	Remedial																				♦					C
Homestead Air Force Base - OU 02	FL	1998	Remedial										♦															PD/D
Homestead Air Force Base OU 28	FL	1999	Remedial										♦															PD/D
Jacksonville Naval Air Station - OU 2 PSC 42	FL	1995	Remedial																						♦			C
Jacksonville Naval Air Station - OU 2 PSCs 2,41,and 43	FL	1994	Remedial										♦															C
Jacksonville Naval Air Station - PSC 2	FL	1994	Remedial												♦													C
Kassauf-Kimerling Battery - Wetlands Soils	FL	1990	Remedial										♦															C
Kassauf-Kimerling Battery Disposal - OU 1 (Landfill Wastes)	FL	1989	Remedial										♦															C
Peak Oil/Bay Drum - OU 1	FL	1993	Remedial																						♦			PD/D
Peak Oil/Bay Drum - OU 1	FL	1993	Remedial																			♦						PD/D
Peak Oil/Bay Drum - OU 1	FL	1993	Remedial															♦										PD/D
Peak Oil/Bay Drum - OU 3	FL	1993	Remedial																						♦			PD/D
Pepper Steel & Alloys, Inc.	FL	1986	Remedial																						♦			C
Sapp Battery Salvage	FL	1986	Remedial										♦															O
Schuylkill Metal	FL	1990	Remedial										♦															C
Southern Solvents OU 1	FL	1999	Remedial																♦									PD/D
Stauffer Chemical Co. (Tarpon Springs) - OU 01	FL	1998	Remedial																						♦			PD/D
Stauffer Chemical Company	FL	1996	Remedial	♦																								D/BI

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REGION 4

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Whitehouse Oil Pits (Amendment)	FL	1992	Remedial																						♦			PD/D
Yellow Water Road Dump	FL	1990	Remedial										♦															C
Zellwood Soil Contamination - OU 1 (Amendment)	FL	1990	Remedial										♦															C
Basket Creek Surface Impoundment	GA	1991	Removal								♦																	C
Cedartown Industries, Inc.	GA	1993	Remedial										♦															C
Diamond Shamrock Corp. - Hinkel Corporation	GA	NA	Removal	♦																								C
Diamond Shamrock Corp. - Liquid Wastes	GA	1994	Remedial			♦																						C
General Refining	GA	1985	Removal											♦														C
Hercules 009 Landfill - Ex situ S/S	GA	1993	Remedial										♦															C
Hercules 009 Landfill - In situ S/S	GA	1993	Remedial																						♦			C
Mathis Brothers Landfill - South Marble Top Road	GA	1996	Remedial			♦																						C
Robins Air Force Base - OU 1, Landfill And Sludge Lagoon	GA	1991	Remedial																				♦					C
Robins Air Force Base - Sludge Lagoon	GA	1991	Remedial										♦															C
T.H. Agriculture & Nutrition Company Site	GA	1992	Removal												♦													C
Winder-Barrow Speedway Drum Site	GA	1994	Removal																				♦					C
Woolfolk Chemical Works, Inc. - OU 03	GA	1998	Remedial										♦															PD/D
DOE Paducah Gaseous Diffusion Plant	KY	1998	Remedial																	♦								D/BI
Howe Valley Landfill	KY	1990	Remedial				♦																					C
Maxey Flats Nuclear Disposal	KY	1991	Remedial										♦															O
Smith'S Farm - OU 1 (Amendment)	KY	1991	Remedial		♦																							C
Smith'S Farm - OU 1 (Amendment)	KY	1991	Remedial												♦													C
Flowood Site	MS	1988	Remedial																						♦			C
Newsom Brothers/Old Reichold Chemicals	MS	1989	Remedial			♦																						C
Southeastern Wood Preserving	MS	1990	Removal									♦																C
Southeastern Wood Preserving	MS	1990	Removal	♦																								C
ABC One Hour Cleaners OU2	NC	1994	Remedial																				♦					D/BI

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REGION 4

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Aberdeen Pesticide Dumps (Amendment)	NC	1991	Remedial												♦													C
Aberdeen Pesticide Dumps, OU 1 & OU 4 - Amendment	NC	1991	Remedial												♦													C
Battery Tech Duracell Lexington OU 1	NC	1999	Remedial																♦									PD/D
Battery Tech Duracell Lexington OU 1	NC	1999	Remedial																						♦			PD/D
Benfield Industries	NC	1995	Remedial	♦																								O
Bypass 601 Groundwater Contamination - Amendment	NC	1993	Remedial											♦														C
Cape Fear Wood Preserving	NC	1989	Remedial												♦													C
Carolina Transformer Co.	NC	1991	Remedial													♦												D/BI
Carolina Transformer Co.	NC	1991	Remedial											♦														D/BI
Celanese - OU 2	NC	1989	Remedial											♦														C
Celanese - OU 2	NC	1989	Remedial				♦																					C
Charles Macon Lagoon & Drum Storage - OU 1, Lagoon No. 7	NC	1991	Remedial																				♦					O
Cherry Point Marine Corps Air Station OU 2	NC	1999	Remedial																				♦					PD/D
FCX - Statesville - OU 2	NC	1995	Remedial		♦																							O
FCX - Statesville - OU 2	NC	1995	Remedial												♦													O
FCX - Statesville - OU 3	NC	1996	Remedial																				♦					PD/D
FCX - Washington	NC	1992	Removal												♦													C
Jadco-Hughes Facility	NC	1990	Remedial																			♦						O
Jadco-Hughes Facility	NC	1990	Remedial																				♦					O
JFD Electronics/Channel Master	NC	1992	Remedial		♦																							PD/D
JFD Electronics/Channel Master	NC	1992	Remedial											♦														PD/D
Koppers (Morrisville Plant)	NC	1993	Remedial			♦																						C
North Carolina State University - Lot 86, Farm Unit #1	NC	1996	Remedial																						♦			PD/D
Potter's Septic Tank Service Pits	NC	1992	Remedial												♦													C
Sodyeco	NC	1987	Remedial			♦																						O
USMC Camp Lejeune Military Base - OU 2, Site 82	NC	1993	Remedial																				♦					C

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REGION 4

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
CSX Mccormick Derailment Site	SC	NA	Removal																				♦					C
Geiger (C&M Oil) - Amendment	SC	1993	Remedial																					♦				C
Golden Strip Septic Tank Service	SC	1991	Remedial										♦															C
Helena Chemical Company Landfill - Amendment	SC	1995	Remedial			♦																						C
Hinson Chemical	SC	1989	Removal																				♦					C
Independent Nail Co.	SC	1987	Remedial										♦															C
Koppers Co., Inc. (Charleston Plant) - OU 01	SC	1998	Remedial															♦										D/BI
Medley Farm - OU 1	SC	1991	Remedial																				♦					O
Palmetto Wood Preserving	SC	1987	Remedial										♦															C
Palmetto Wood Preserving	SC	1987	Remedial		♦																							C
Sangamo/Twelve-Mile/Hartwell Pcb - OU 1	SC	1991	Remedial												♦													C
Savannah River (USDOE) - L-Area Oil And Chemical Basin And L-Area Acid/Caustic Basin	SC	1997	Remedial																					♦				D/BI
Savannah River (USDOE) - Old F-Area Seepage Basin, SRS Building Number 904-49g	SC	1997	Remedial																					♦				PD/D
Savannah River Site (USDOE) C Area Burning/Rubble Pit 131-C (U)	SC	1999	Remedial																				♦					PD/D
Savannah River Site-USDOE-OU 55,60,65,66	SC	1999	Remedial																					♦				D/BI
SCRDI Bluff Road	SC	1990	Remedial																				♦					C
Shuron Inc - OU 01	SC	1998	Remedial										♦															PD/D
Townsend Chainsaw Company, Inc.	SC	1997	Remedial																♦									D/BI
Wamchem, Inc.	SC	1988	Remedial												♦													C
Arlington Blending And Packaging Co. - OU 1	TN	1991	Remedial												♦													C
Carrier Air Conditioning	TN	1992	Remedial																				♦					O
Creotox Chemical Products	TN	1995	Removal			♦																						C
Milan Army Ammunition Plant - OU 3 & 4, Industrial Soil	TN	1996	Remedial	♦																								O

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REGION 4

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE: Source Control / Ex Situ: Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	In Situ: Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	STATUS
Oak Ridge Reservation (USDOE) - OU 14, Surface Impoundments	TN	1997	Remedial											♦														D/BI
Oak Ridge Reservation (USDOE) - OU 3, Pond Waste Management Project	TN	1991	Remedial											♦														C
Oak Ridge Reservation (USDOE) - OU 40, Burial Complex 4	TN	1996	Remedial																						♦			C
Ross Metals Inc OU 1	TN	1999	Remedial											♦														PD/D

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REGION 5

Source Control Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE: Source Control / Ex Situ: Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	In Situ: Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	STATUS
Acme Solvent Reclaiming, Inc.	IL	1991	Remedial										♦															C
Acme Solvent Reclaiming, Inc., OU 3	IL	1991	Remedial												♦													C
Acme Solvent Reclaiming, Inc., OU 6	IL	1991	Remedial																					♦				O
Cross Brothers Pail Recycling	IL	1989	Remedial			♦																						C
Cross Brothers Pail Recycling	IL	1989	Remedial																				♦					O
Galesburg/Koppers	IL	1989	Remedial	♦																								O
Jennison Wright Corporation Inc	IL	1999	Remedial	♦																								PD/D
Jennison Wright Corporation Inc	IL	1999	Remedial																							♦		PD/D
Joliet Army Ammunition Plant Soil and Groundwater (LAP) OU	IL	1999	Remedial	♦																								O
Joliet Army Ammunition Plant Soil and Groundwater-MFG OU	IL	1999	Remedial	♦																								O
Lasalle Electrical Utilities (1988-1991)	IL	1986	Remedial				♦																					C
Lasalle Electrical Utilities (1992-1995)	IL	1988	Remedial				♦																					C
Lenz Oil Service, Inc OU1	IL	1999	Remedial										♦															PD/D
Outboard Marine Waukegan Coke Plant OU2	IL	1999	Remedial										♦															PD/D
OUtboard Marine/Waukegan Harbor	IL	1989	Remedial			♦																						C
Outboard Marine/Waukegan Harbor - OU 3	IL	1989	Remedial												♦													C
Sangamo Electric Dump/Crab Orchard National Wildlife Refuge - Explosives/Munitions Manufacturing Area OU	IL	1997	Removal			♦																						PD/D
Sangamo Electric Dump/Crab Orchard National Wildlife Refuge - Metals Areas OU	IL	1990	Remedial										♦															C
Sangamo Electric Dump/Crab Orchard National Wildlife Refuge - Pcb Areas OU	IL	1990	Remedial				♦																					C
Sangamo Electric Dump/Crab Orchard National Wildlife Refuge - PCB Areas OU	IL	1990	Remedial										♦															C
Savanna Army Depot Activity - TNT Washout Lagoon Area	IL	1992	Remedial				♦																					C
Velsicol Chemical	IL	1988	Remedial										♦															C

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REGION 5

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE																						STATUS
				Source Control																						
				Ex Situ															In Situ							
				Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	
Accra-Pac	IN	1987	Removal																				♦				D/BI
Accra-Pac	IN	NA	Removal															♦									O
American Chemical Services, Inc	IN	1999	Remedial																				♦				PD/D
American Chemical Services, Inc.	IN	1992	Remedial																				♦				D/BI
American Chemical Services, Inc.	IN	1992	Remedial			♦																					PD/D
Bennetts Dump-Stone Quarry	IN	1999	Remedial			♦																					C
Continental Steel Corp. - OU 02	IN	1998	Remedial										♦														PD/D
Enviro. Conservation And Chemical (Amendment)	IN	1991	Remedial																				♦				O
Fisher-Calo	IN	1990	Remedial																				♦				O
Fort Wayne Reduction Dump	IN	1988	Remedial			♦																					C
Indiana Wood Treating	IN	1993	Removal	♦																							C
Main Street Well Field	IN	1991	Remedial																				♦				O
Midco I	IN	1989	Remedial																				♦				PD/D
Midco I - Ex situ Sediment S/S	IN	1989	Remedial										♦														PD/D
Midco I - In Situ Soil S/S	IN	1989	Remedial																					♦			PD/D
Midco II	IN	1989	Remedial																					♦			PD/D
Midco II	IN	1989	Remedial																				♦				PD/D
Neals Dump-Owen County	IN	1999	Remedial			♦																					C
Ninth Avenue Dump	IN	1989	Remedial																			♦					C
Ninth Avenue Dump (Amendment)	IN	1994	Remedial																				♦				O
Reilly Tar & Chemical (Indianapolis Plant)	IN	1993	Remedial												♦												C
Reilly Tar & Chemical (Indianapolis Plant) - OU 2, Fire Pond at South Landfill	IN	1993	Remedial																					♦			C
Reilly Tar & Chemical (Indianapolis Plant) - OU 4, Hot Spot A	IN	1996	Remedial																				♦				O
Reilly Tar & Chemical (Indianapolis Plant) - OU 4, Hot Spot B	IN	1996	Remedial																				♦				C

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REGION 5

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Seymour Recycling Corp.	IN	1987	Remedial																				♦					O
Seymour Recycling Corp.	IN	1987	Remedial															♦										C
Wayne Waste Oil	IN	1990	Remedial																				♦					O
Anderson Development Co. (Amendment)	MI	1991	Remedial												♦													C
Auto Ion Chemicals	MI	1989	Remedial										♦															C
Bendix Site, St. Joseph	MI	1997	Remedial																				♦					O
Bofors Nobel OU1-Phyto	MI	1999	Remedial																			♦						PD/D
Carter Industrials, Inc.	MI	1991	Remedial										♦															C
Chem Central	MI	1991	Remedial																				♦					O
Cliff/Dow Dump	MI	1989	Remedial			♦																						C
Electrovoice - OU 1	MI	1992	Remedial																				♦					O
Forest Waste Products	MI	1986	Remedial										♦															C
Kysor Industrial Corp.	MI	1989	Remedial																				♦					O
Liquid Disposal, Inc.	MI	1987	Remedial																					♦				C
Metamora Landfill	MI	1986	Remedial			♦																						C
Organic Chemicals, Inc. - OU 2	MI	1997	Remedial																					♦				PD/D
Parsons Chemical (ETM Enterprise-1)	MI	1990	Removal																							♦		C
PBM Enterprises (Van Dusen Airport Service)	MI	1988	Removal		♦																							C
Peerless Plating	MI	1992	Remedial																				♦					C
Peerless Plating	MI	1992	Remedial										♦															C
Petoskey Municipal Well Field - OU 01	MI	1998	Remedial								♦																	D/BI
Rasmussens Dump	MI	1991	Remedial																			♦						O
Rose Township Dump	MI	1987	Remedial				♦																					C
Rose Township Dump (Amendment)	MI	1995	Remedial																				♦					O
Spartan Chemical Co. - OU 01	MI	1998	Remedial																				♦					PD/D
Spiegelberg Landfill	MI	1986	Remedial			♦																						C

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REGION 5

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE: Source Control – Ex Situ: Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	In Situ: Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	STATUS
Springfield Township Dump	MI	1998	Remedial									♦																O
Springfield Township Dump	MI	1990	Remedial																				♦					PD/D
Springfield Township Dump - OU 01	MI	1998	Remedial										♦															PD/D
Springfield Township Dump - OU 01	MI	1998	Remedial												♦													PD/D
Springfield Township Dump	MI	1990	Remedial										♦															PD/D
Sturgis Municipal Well Field	MI	1991	Remedial																				♦					O
Tar Lake	MI	1992	Remedial			♦																						C
Thermo-Chem, Inc. - OU 1	MI	1991	Remedial																				♦					O
Verona Well Field - OU 1 (Thomas Solvent Raymond Road)	MI	1985	Remedial																				♦					C
Verona Well Field - OU 2 (Grand Truck Railroad Paint Shop Area)	MI	1991	Remedial																				♦					O
Verona Well Field - OU 2 (Thomas Solvent Annex Area)	MI	1991	Remedial																				♦					O
Verona Well Field, Thomas Solvent Raymond Road OU 1	MI	1985	Removal																				♦					C
Arrowhead Refinery Co. (Amendment)	MN	1994	Remedial											♦														C
Burlington Northern Railroad Tie Treating Plant	MN	1986	Remedial	♦																								C
Joslyn Manufacturing And Supply Co.	MN	1989	Remedial	♦																								C
Kummer Sanitary Landfill - Soil Phase	MN	1988	Remedial																				♦					C
Long Prairie Groundwater Contamination	MN	1988	Remedial																				♦					O
Macgillis And Gibbs/Bell Lumber And Pole - OU 3	MN	1994	Remedial										♦															C
Macgillis and Gibbs/Bell Lumber and Pole- OU1	MN	1999	Remedial		♦																							PD/D
Macgillis and Gibbs/Bell Lumber and Pole- OU1	MN	1999	Remedial	♦																								PD/D
Macgillis and Gibbs/Bell Lumber and Pole- OU3	MN	1999	Removal		♦																							PD/D
Macgillis and Gibbs/Bell Lumber and Pole- OU3	MN	1999	Removal	♦																								PD/D
New Brighton/Arden Hills - PCB Burn OU	MN	1989	Remedial				♦																					C
New Brighton/Arden Hills/TCAAP (USArmy) - OU 07	MN	1998	Remedial																				♦					PD/D
New Brighton/Arden Hills/TCAAP (USArmy) - OU 07	MN	1998	Remedial										♦															O

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REGION 5

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Ritari Post And Pole - OU 1	MN	1994	Remedial	♦																								PD/D
South Andover Salvage Yards - OU 2 (Amendment)	MN	1994	Remedial												♦													C
St. Louis River/Interlake/Duluth Tar Site - Soils OU	MN	1990	Remedial												♦													C
St. Louis River/Interlake/Duluth Tar Site - Tar Seep	MN	1990	Remedial			♦																						C
St. Louis River/Intertake/Duluth Tar Site - Wire Mill Pond And OU J	MN	1990	Remedial																						♦			C
University Of Minnesota	MN	1991	Remedial				♦																					C
Waite Park Wells - OUs 1, 2, & 3	MN	1994	Remedial										♦															O
Alsco Anaconda	OH	1989	Remedial			♦																						C
Big D Campground	OH	1989	Remedial				♦																					C
Fernald Environmental Management Project, Formerly Feed Materials Production Center, OU 5	OH	1996	Remedial										♦															C
Fields Brook	OH	1997	Remedial			♦																						D/BI
Fields Brook - Source Control OU	OH	1997	Remedial																				♦					O
Laskin/Poplar Oil	OH	1984	Removal			♦																						C
Laskin/Poplar Oil (FY87)	OH	1987	Remedial				♦																					C
Laskin/Poplar Oil (FY89)	OH	1989	Remedial				♦																					C
Miami County Incinerator	OH	1989	Remedial																				♦					O
Ormet Corporation	OH	1994	Remedial																			♦						O
Ormet Corporation	OH	1994	Remedial										♦															C
Pristine, Inc. (Amendment)	OH	1990	Remedial																				♦					O
Pristine, Inc. (Amendment)	OH	1990	Remedial												♦													C
Summit National Liquid Disposal Service	OH	1988	Remedial				♦																					C
United Scrap Lead Company	OH	1997	Remedial										♦															C
Usdoe Feed Materials Production Center - OU 4	OH	1995	Remedial													♦												PD/D
Zanesville Well Field	OH	1991	Remedial																				♦					O
Better Brite Chrome And Zinc Shops - Chrome Shop	WI	1996	Remedial																						♦			O

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Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Hagen Farm - Source Control OU	WI	1990	Remedial																				♦					O
Moss-American (Kerr-Mcgee Oil Co.) - OU 01	WI	1998	Remedial													♦												PD/D
Muskego Sanitary Landfill - Interim Action OU 1	WI	1992	Remedial																				♦					PD/D
N.W. Mauthe Site	WI	1994	Remedial											♦														C
National Presto Industries - Lagoon No.1	WI	1997	Removal																				♦					C
National Presto Industries - Melby Road Disposal Site	WI	1996	Remedial																				♦					D/BI
Northern Engraving Corporation - Sludge Lagoon	WI	1987	Remedial																					♦				C
Oconomowoc Electroplating	WI	1990	Remedial											♦														C
Onalaska Municipal Landfill	WI	1990	Remedial															♦										C
Penta Wood Products - OU 01	WI	1998	Remedial											♦														PD/D
Penta Wood Products - OU 01	WI	1998	Remedial															♦										PD/D
Wausau Groundwater Contamination	WI	1989	Remedial																				♦					O

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REGION 6

Source Control Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Arkwood Inc.	AR	1990	Remedial			♦																						C
Arkwood Inc.	AR	1990	Remedial								♦																	C
Gurley Pit	AR	1987	Remedial											♦														C
Industrial Waste Control	AR	1988	Remedial																						♦			C
Jacksonville Municipal Landfill	AR	1990	Remedial											♦														C
Jacksonville Municipal Landfill	AR	1990	Remedial			♦																						C
Macmillan Ring Free Oil Company	AR	1993	Removal	♦																								C
Mid-South Wood Products	AR	1987	Remedial											♦														C
Old Midland Products	AR	1988	Remedial				♦																					C
Popile	AR	1993	Remedial	♦																								PD/D
Rogers Road Municipal Landfill	AR	1990	Remedial			♦																						C
Rogers Road Municipal Landfill	AR	1990	Remedial											♦														C
South 8th Street Landfill - OU 1	AR	1998	Remedial																						♦			D/BI
Vertac, Inc.	AR	1990	Remedial				♦																					C
Vertac, Inc. - Onsite OU 1	AR	1993	Remedial			♦																						C
Vertac, Inc. - OU 2, Tetrachlorobenzene Soils	AR	1996	Remedial			♦																						C
American Creosote Works, Inc. - Winnfield Plant (Groundwater)	LA	1993	Remedial															♦										O
American Creosote Works, Inc. (Winnfield Plant)	LA	1993	Remedial				♦																					C
Bayou Bonfouca	LA	1987	Remedial				♦																					C
Cleve Reber	LA	1987	Remedial				♦																					C
Cleve Reber	LA	1987	Remedial											♦														C
Gulf Coast Vacuum Services - OU 1	LA	1992	Remedial																						♦			O
Gulf Coast Vacuum Services - OU 1	LA	1995	Remedial	♦																								O
Madisonville Creosote Works - OU 01	LA	1998	Remedial												♦													D/BI
Old Inger Oil Refinery	LA	1984	Remedial	♦																								O

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REGION 6

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Pab Oil & Chemical Services, Inc.	LA	1993	Remedial										♦															C
Petro-Processors Of Louisiana, Inc.	LA	1989	Remedial				♦																					O
Petro-Processors Of Louisiana, Inc.	LA	1989	Remedial			♦																						C
Southern Shipbuilding Corporation	LA	1995	Remedial			♦																						C
Atchison, Topeka, & Santa Fe Clovis/Santa Fe Lake - TPH Lake Sediments	NM	1988	Remedial	♦																								C
Cal West Metals	NM	1992	Remedial										♦															C
Cimarron Mining Corp.	NM	1991	Remedial										♦															C
Prewitt Abandoned Refinery	NM	1992	Remedial	♦																								C
Prewitt Abandoned Refinery	NM	1992	Remedial																				♦					O
Double Eagle Refinery Co.	OK	1992	Remedial										♦															C
Double Eagle Refinery Co.	OK	1992	Remedial					♦																				C
Fourth Street Abandoned Refinery	OK	1992	Remedial					♦																				C
Fourth Street Abandoned Refinery	OK	1992	Remedial																					♦				C
Fourth Street Abandoned Refinery	OK	1992	Remedial																					♦				C
Hardage/Criner - Amendment	OK	1990	Remedial			♦																						C
Okalahoma Refining Co.	OK	1992	Remedial					♦																				O
Oklahoma Refining Co.	OK	1992	Remedial																				♦					O
Oklahoma Refining Co. - Hazardous Landfill	OK	1992	Remedial	♦																								O
Oklahoma Refining Co.	OK	1992	Remedial					♦																				O
Oklahoma Refining Co. - Nonhazardous Landfill	OK	1992	Remedial	♦																								O
Sand Springs Petrochemical Complex	OK	1987	Remedial																				♦					C
Sand Springs Petrochemical Complex - Glenn Wynn Facility	OK	1987	Remedial			♦																						C
Tinker AFB - Soldier Creek And Building 3001	OK	1990	Remedial															♦										O
Traband Warehouse	OK	1988	Removal												♦													C
Air Force Plant 4 - East Parking Lot Groundwater Plume	TX	1996	Remedial																						♦			PD/D

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REGION 6

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Baldwin Waste Oil	TX	1992	Removal	♦																								C
Bio-Ecology Systems, Inc.	TX	1984	Remedial										♦															C
Brio Refining	TX	1988	Remedial				♦																					PD/D
French Limited	TX	1988	Remedial															♦										C
French Limited	TX	1988	Remedial																						♦			C
Longhorn Army Ammunition Plant - Burning Ground No. 3	TX	1995	Remedial												♦													C
MOTCO	TX	1985	Remedial				♦																					C
Motco, Inc. - OU 1	TX	1993	Remedial			♦																						C
North Cavalcade Street	TX	1988	Remedial	♦																								O
Pesses Chemical Co.	TX	1989	Remedial																						♦			C
Petro-Chemical Systems, Inc. - OU 2	TX	1991	Remedial																				♦					O
Petro-Chemical Systems, Inc. - OU 2	TX	1998	Remedial															♦										PD/D
Petro-Chemical Systems, Inc. - OU 2	TX	1998	Remedial																							♦		O
Sheridan Disposal Services - Source Lagoon OU	TX	1989	Remedial	♦																								PD/D
Sikes Disposal Pits	TX	1986	Remedial				♦																					C
Tex-Tin OU 1	TX	1999	Remedial		♦																							PD/D
Tex-Tin OU 1	TX	1999	Remedial										♦															PD/D
Triangle Chemical Co.	TX	1985	Remedial					♦																				C
Triangle Chemical Co.	TX	1985	Remedial			♦																						C

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REGION 7

Source Control Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Chemplex - OU 2	IA	1993	Remedial																				♦					O
El Dupont De Nemours & Co. Inc.	IA	1991	Remedial										♦															C
Fairfield Coal Gasification Plant	IA	1990	Remedial			♦																						C
Iowa Army Ammunition Plant - OU 01	IA	1998	Remedial										♦															O
Mcgraw Edison	IA	1993	Remedial																				♦					D/BI
Mid-America Tanning	IA	1991	Remedial																					♦				O
Peoples Natural Gas	IA	1991	Remedial			♦																						C
Peoples Natural Gas	IA	1991	Remedial															♦										PD/D
Shaw Avenue Dump	IA	1991	Remedial										♦															C
Vogel Paint & Wax	IA	1989	Remedial										♦															C
Vogel Paint & Wax	IA	1989	Remedial	♦																								O
29th And Mead Ground Water Contamination, Coleman OU	KS	1992	Remedial																				♦					D/BI
57th and North Broadway Streets OU 1 - Former Wilko Paint Facility	KS	1999	Remedial																				♦					PD/D
Arkansas City Dump	KS	1988	Remedial					♦																				C
Pester Refinery Co.	KS	1992	Remedial																			♦						O
Pester Refinery Co. - OU 1, Burn Pond Site	KS	1992	Remedial															♦										O
Crown Plating	MO	1989	Removal		♦																							C
Ellisville Site (Amendment)	MO	1991	Remedial			♦																						C
Former Weldon Spring Ordnance Works - OU 1, Soils And Pipeline	MO	1996	Remedial				♦																					C
Former Weldon Spring Ordnance Works - OU 1, Soils And Pipeline	MO	1996	Remedial										♦															D/BI
Kem-Pest Laboratories	MO	1991	Remedial			♦																						C
Lake City Army Ammunition Plant Area 18 OU	MO	1999	Remedial																♦									D/BI
Lee Chemical	MO	1991	Remedial																			♦						O
Minker/Stout/Romaine Creek (R&S)	MO	1988	Remedial			♦																						C

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REGION 7

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE																						STATUS
				Source Control																						
				Ex Situ														In Situ								
				Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	
Missouri Electric Works	MO	1990	Remedial												♦											D/BI
Oronogo - Duenweg Mining Bell Site - OU 2 And 3	MO	1996	Remedial																					♦		PD/D
Scott Lumber	MO	1987	Removal	♦																						C
Shenandoah Stables	MO	1990	Remedial			♦																				C
Syntex Facility	MO	1988	Remedial			♦																				C
Times Beach Site	MO	1988	Remedial				♦																			C
Valley Park Tce Site - Wainwright OU	MO	1996	Remedial																				♦			C
Weldon Spring Quarry/Plant/Pits (USDOE)	MO	1993	Remedial										♦													C
Cleburn Street Well	NE	1996	Remedial																				♦			O
Former Nebraska Ordnance Plant - OU 1	NE	1995	Remedial				♦																			C
Former Nebraska Ordnance Plant - OU 2	NE	1997	Remedial				♦																			C
Hastings Groundwater Contamination - Colorado Ave, OU 9	NE	1988	Remedial																				♦			O
Hastings Groundwater Contamination - Far-Mar Co. Subsite, OU 3	NE	1988	Remedial																				♦			O
Hastings Groundwater Contamination - Hastings East Industrial Park Surface Soils, Former Naval Ammunition Depot	NE	1990	Remedial																					♦		C
Hastings Groundwater Contamination - Hastings East Industrial Park Surface Soils, Former Naval Ammunition Depot	NE	1995	Remedial			♦																				C
Hastings Groundwater Contamination - Hastings East Industrial Park Vadose Zone, Former Naval Ammunition Depot	NE	NA	Removal																				♦			O
Hastings Groundwater Contamination - OU 17, Well No. 3, Plume 2	NE	1995	Removal																				♦			C
Hastings Groundwater Contamination - Second Street Subsite, OU 12	NE	1995	Removal																				♦			O
Hastings Groundwater Contamination - Well No. 3 Plume 1	NE	1989	Remedial																				♦			C
Lindsay Manufacturing	NE	1990	Remedial																				♦			C
Sherwood Medical Co.	NE	1995	Remedial					♦																		C
Waverly Groundwater Contamination	NE	1990	Remedial																				♦			O

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REGION 8

Source Control Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Broderick Wood Products - OU 1 (Impoundment Sludges)	CO	1992	Remedial										♦															C
Broderick Wood Products - OU 2 (Groundwater)	CO	1992	Remedial															♦										O
Broderick Wood Products - OU 2 (Soils)	CO	1992	Remedial	♦																								O
Chemical Sales Company - OU 1	CO	1991	Remedial																				♦					O
Denver Radium Site - OU 8	CO	1992	Remedial										♦															C
Lockheed/Martin (Denver Aerospace)	CO	1990	Remedial			♦																						C
Rocky Flats Plant (USDOE) - OU 4, Industrial Areas	CO	1992	Remedial										♦															C
Rocky Mountain Arsenal - Basin F Liquids	CO	1997	Remedial				♦																					C
Rocky Mountain Arsenal - Onpost OU, Buried M-1 Pits	CO	1996	Remedial																					♦				PD/D
Rocky Mountain Arsenal - Onpost OU, Former Basin F	CO	1996	Remedial																					♦				PD/D
Rocky Mountain Arsenal - Onpost OU, Hex Pits	CO	1996	Remedial																						♦			PD/D
Rocky Mountain Arsenal - OU 18, Motor Pool Area	CO	1990	Remedial																				♦					C
Rocky Mountain Arsenal - OU 25, Basin F Liquids	CO	1997	Remedial				♦																					C
Sand Creek Industrial - OU 1	CO	1989	Remedial																				♦					C
Sand Creek Industrial - OU 5	CO	1993	Remedial												♦													C
Summitville Mine - OU 0	CO	1995	Remedial						♦																			O
Summitville Mine - OU 2	CO	1995	Remedial						♦																			C
Woodbury Chemical - OU 1	CO	1985	Remedial			♦																						C
Woodbury Chemical - OU2	CO	1989	Remedial			♦																						C
Anaconda Co. Smelter - Flue Dust	MT	1991	Remedial										♦															C
Anaconda Co. Smelter - OU 04	MT	1998	Remedial																					♦				PD/D
Burlington Northern (Somers Plant)	MT	1989	Remedial	♦																								O
Idaho Pole Company	MT	1996	Remedial	♦																								O
Libby Groundwater Contamination	MT	1989	Remedial	♦																								O
Montana Pole And Treating Plant	MT	1993	Remedial	♦																								O
Montana Pole And Treating Plant	MT	1993	Remedial			♦																						C

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REGION 8

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Montana Pole And Treating Plant - Area Under Interstate 15/90	MT	1993	Remedial																			♦						PD/D
Silver Bow Creek/Butte Area - Rocker Timber Framing OU And Treatment Plant	MT	1996	Remedial		♦																							C
Ellsworth AFB - OU 1	SD	1995	Remedial																				♦					O
Hill Air Force Base - OU 2	UT	1991	Remedial			♦																						O
Hill Air Force Base - OU 2	UT	1996	Remedial																				♦					PD/D
Hill Air Force Base - OU 3	UT	1995	Remedial																				♦					O
Jacobs Smelter OU 1	UT	1999	Remedial										♦															C
Ogden Defense Depot (DLA)	UT	1990	Remedial			♦																						C
Ogden Defense Depot (DLA) - OU 3	UT	1992	Remedial			♦																						D/BI
Portland Cement (Kiln Dust #2 & #3) - OU 2, Chromium Bearing Bricks And Contaminated Soils	UT	1992	Remedial										♦															C
Tooele Army Depot-North Area - OUs 5, 6 ,7, And 10	UT	1994	Remedial			♦																						C
Utah Power & Light/American Barrel	UT	1993	Remedial																				♦					O
Wasatch Chemical	UT	1991	Remedial																							♦		C
Wasatch Chemical	UT	1991	Remedial	♦																								C
Mystery Bridge Road/Highway 20 - OU 2	WY	NA	Removal																				♦					C

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REGION 9

Source Control Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE																						STATUS
				Source Control																						
				Ex Situ														In Situ								
				Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	
Apache Powder Co.	AZ	1994	Remedial			♦																				PD/D
Apache Powder Co.	AZ	1994	Remedial											♦														PD/D
Gila River Indian Reservation	AZ	1984	Removal															♦										C
Gila River Indian Reservation	AZ	1984	Removal																♦									C
Hassayampa Landfill	AZ	1992	Remedial																				♦					O
Indian Bend Wash Area - North Area (Area 12)	AZ	1993	Remedial																				♦					O
Indian Bend Wash Area - North Area (Area 7)	AZ	1993	Remedial																				♦					O
Indian Bend Wash Area - North Area (Area 8)	AZ	1993	Remedial																				♦					C
Indian Bend Wash Area - South Area (Rd 1 Of OU 7)	AZ	1991	Remedial																				♦					O
Luke Air Force Base - OU 2/DP23	AZ	1994	Remedial	♦																								C
Luke Air Force Base OU 1	AZ	1999	Remedial																				♦					PD/D
Middle Mountain Silvex	AZ		Removal	♦																								C
Motorola 52nd Street - OU 1	AZ	1988	Remedial																				♦					C
Navajo Toxaphene	AZ	1995	Removal	♦																								C
Phoenix-Goodyear Airport Area (North Facility)	AZ	1989	Remedial																				♦					O
Phoenix-Goodyear Airport Area (South Facility)	AZ	1989	Remedial																				♦					O
Sanders Aviation	AZ	NA	Removal												♦													C
Stanford Pesticide	AZ	1987	Removal		♦																							C
Tucson International Airport - Sites 1, 2, 3	AZ	1997	Remedial																				♦					O
Tucson International Airport Area - OU 03 - Soil West of Site 5	AZ	1997	Remedial																				♦					PD/D
Tucson International Airport Area - Site 4, 5, 6	AZ	1998	Remedial										♦															O
Williams Air Force Base - OU 2	AZ	1993	Remedial																				♦					O
Williams Air Force Base - OU 3	AZ	1996	Remedial															♦										O
Williams Air Force Base - OU 3	AZ	1993	Remedial																				♦					O
Advanced Micro Devices (Formerly Monolithic Memories) - 1165 E. Arques Ave., (OU 1) Subunit 2	CA	1991	Remedial																				♦					C

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REGION 9

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Advanced Micro Devices Inc.	CA	1991	Remedial			♦																						C
Barstow Marine Corps Logistics Base - OU 01	CA	1998	Remedial																				♦					O
Brewster Well Field - OU 2	CA	1988	Remedial			♦																						C
Brown & Bryant	CA	NA	Removal									♦																C
Castle AFB - Discharge Area 4	CA	1995	Removal																				♦					O
Castle AFB - Discharge Area 8	CA	NA	Removal																				♦					O
Castle AFB - Fire Training Area 1 (Petroleum Hydrocarbons/ TCE Areas)	CA	NA	Removal																				♦					O
Castle AFB - Fuel Spill 1	CA	NA	Removal																				♦					O
DC Metals	CA	1997	Removal																				♦					C
Del Amo Facility	CA	1997	Remedial																				♦					D/BI
El Toro Marine Corps Air Station - Hangar Area, Interim ROD	CA	1997	Remedial																				♦					O
Fairchild Semiconductor (Mt. View) - Bldg 19 (369 N. Whisman Rd)	CA	1989	Remedial																				♦					C
Fairchild Semiconductor (Mt. View) - Bldg 9 (401 National Ave.)	CA	1989	Remedial																				♦					C
Fairchild Semiconductor (Mt. View) - General Instrument Corp./Siltec Corp (405 National Ave.)	CA	1989	Remedial																				♦					C
Fairchild Semiconductor (Mt. View) - Siemens/Sobrato (455 & 487 Middlefield Rd)	CA	1993	Remedial																				♦					O
Fairchild Semiconductor (South San Jose)	CA	1989	Remedial																				♦					C
Fort Ord - Fort Ord Soil Treatment Area (FOSTA), OU 4	CA	1994	Remedial	♦																								C
George Air Force base OU 3 FT19a	CA	1999	Remedial															♦										O
George Air Force Base Site FT 19c	CA	1999	Remedial																				♦					O
Goerge Air Force Base OU 3 OT51	CA	1999	Remedial															♦										O
Hewlett-Packard - 620-640 Page Mill Road	CA	1995	Remedial																				♦					O
IBM (San Jose)	CA	1989	Remedial																				♦					O

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REGION 9

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE																						STATUS
				Source Control																						
				Ex Situ															In Situ							
				Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	
Intersil/Siemens - Intersil OU	CA	1990	Remedial																			♦				C
Intersil/Siemens - Siemins OU	CA	1990	Remedial																			♦				O
J.H. Baxter	CA	1998	Remedial														♦									D/BI
J.H. Baxter	CA	1998	Remedial										♦													D/BI
J.H. Baxter - Area B	CA	1998	Remedial														♦									O
Jasco Chemical Co.	CA	1992	Remedial	♦																						C
Lawrence Livermore National Laboratory	CA	1992	Remedial																			♦				O
Lawrence Livermore National Laboratory - Site 300, OU Building 834	CA	1995	Remedial																			♦				O
Lawrence Livermore National Laboratory - USDOE, OU 1	CA	1997	Remedial																			♦				O
Lorentz Barrel And Drum - OU 1	CA	1993	Remedial																			♦				O
March AFB - OU 1, Area 5, Sites 31a And 31b	CA	1996	Remedial																			♦				O
March AFB - OU 1, Site 18 - Jet Engine Test Cell	CA	1996	Removal								♦															O
March AFB - OU 1, Site 34 - UST Site	CA	1996	Removal														♦									C
March AFB - OU 1, Site 43 - Caltrans, Old Gas Station-USTs at Camp Hahn Site	CA	NA	Removal														♦									O
March AFB - OU 2, Site 36	CA	NA	Removal																			♦				O
March AFB - OU 2, Site 39 - Old Gasoline Station	CA	NA	Removal														♦									O
March AFB - OU 3, Site 33 - Panero Site	CA	NA	Removal																			♦				O
Mather AFB - Soil And Groundwater OU, Mather Soils Biofarm	CA	1996	Remedial	♦																						O
Mather AFB - Soil And Groundwater OU, Site 57	CA	1996	Remedial																			♦				O
Mather Air Force Base - OU 04	CA	1998	Remedial	♦																						O
Mather Air Force Base - OU 04	CA	1998	Remedial																			♦				PD/D
Mather Air Force Base - OU 04 (86&87)	CA	1998	Remedial										♦													C
Mather Air Force Base - OU 04 (Site 18,23 & 59)	CA	1998	Remedial														♦									PD/D
McClellan Air Force Base - Site S, OU D	CA	NA	Removal																			♦				O

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REGION 9

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE																						STATUS
				Source Control																						
				Ex Situ															In Situ							
				Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	
Modesto Groundwater Contamination	CA	1997	Remedial																				♦				D/BI
National Semiconductor Corp. - OU 1, Subunit 1	CA	1991	Remedial																				♦				O
Nelco Oil Refining - II	CA	1993	Removal	♦																							C
Norton Air Force Base - CBA OU	CA	1994	Remedial																				♦				C
Pacific Coast Pipelines	CA	1992	Remedial																				♦				O
Phillips [Formerly Signetics (Amd 901) (TRW)]	CA	1991	Remedial																				♦				O
Purity Oil Sales, Inc. - OU 2	CA	1992	Remedial																				♦				D/BI
Rattlesnake Creek	CA	1993	Removal	♦																							C
Rattlesnake Creek	CA	1993	Removal														♦										C
Rattlesnake Creek	CA	1993	Removal																				♦				C
Raytheon, Mountain View (350 Ellis Street/ 415 Middlefield Rd)	CA	1989	Remedial																				♦				O
Rhone-Poulenc/Zoecon - Ex Situ S/S	CA	1992	Remedial										♦														C
Rhone-Poulenc/Zoecon - In Situ S/S	CA	1992	Remedial																					♦			C
Roseville Drums	CA	1988	Removal	♦																							C
Sacramento Army Depot	CA	1993	Remedial										♦														C
Sacramento Army Depot - Burn Pits OU	CA	1993	Remedial																				♦				C
Sacramento Army Depot - OU 3, Tank 2	CA	1992	Remedial																				♦				C
Selma Pressure Treating	CA	1988	Remedial										♦														O
Sharpe Army Depot - Defense Distribution Region West (DDRW)-Sharpe Site - OU 2	CA	1996	Remedial																				♦				O
Southern California Edison, Visalia Pole Yard	CA	1994	Remedial																						♦		O
Spectra-Physics, Inc. - OU 1, System No. 1	CA	1991	Remedial																				♦				C
Spectra-Physics, Inc. - OU 1, System No. 2	CA	1991	Remedial																				♦				C
Tracy Defense Depot (USArmy) - OU 01	CA	1998	Remedial														♦										PD/D
Tracy Defense Depot (USArmy) - OU 01	CA	1998	Remedial																				♦				PD/D
Watkins-Johnson	CA	1990	Remedial																				♦				O

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REGION 9

Source Control Treatment Technology Summary Matrix (continued)

				Source Control																										
				Ex Situ															In Situ											
				Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification			
SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE																										STATUS
Westinghouse Electric (Sunnyvale Plant)	CA	1992	Remedial			♦																								C
Pearl Harbor Naval Complex - Area Laundry Site	HI	NA	Removal																				♦							O
Pearl Harbor Naval Complex - Site 22	HI	NA	Removal												♦															C
Poly-Carb	NV	1987	Removal										♦																	C
Poly-Carb	NV	1987	Removal	♦																										C

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REGION 10

Source Control Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE: Source Control / Ex Situ: Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	In Situ: Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	STATUS
Arctic Surplus	AK	1995	Remedial										♦															PD/D
Arctic Surplus	AK	1995	Remedial											♦														PD/D
Eielson Air Force Base - OU 1 (Power Plant)	AK	1994	Remedial														♦											O
Eielson Air Force Base - OU 1 (Refueling Loop)	AK	1992	Remedial														♦											O
Eielson Air Force Base - OU 2 (Fuel Area)	AK	1994	Remedial														♦											O
Eislson Air Force Base - OU 3 (Refueling Loop Usts)	AK	1994	Remedial														♦											O
Elmendorf AFB - OU 2	AK	1995	Remedial												♦													C
Elmendorf AFB - OU 4	AK	1995	Remedial														♦											O
Elmendorf AFB - OU 5	AK	1995	Remedial	♦																								O
Elmendorf AFB - OU 6 And Source Area SS19	AK	1997	Remedial																				♦					C
Elmendorf AFB - OU 6 And Source Area SS19	AK	1997	Remedial												♦													C
Fort Richardson - OU B	AK	1997	Remedial																				♦					O
Fort Richardson - OU B	AK	1997	Remedial												♦													C
Fort Wainwright - OU 2 - Building 1168 Leach Well	AK	1997	Remedial																				♦					O
Fort Wainwright - OU 2 - DRMO Yard	AK	1997	Remedial																				♦					O
Fort Wainwright - OU 3	AK	1996	Remedial																				♦					O
Fort Wainwright - OU 4	AK	1996	Remedial																				♦					O
Fort Wainwright OU 5 WQFS1	AK	1999	Remedial																				♦					O
Fort Wainwright OU 5 WQFS2	AK	1999	Remedial																				♦					O
Fort Wainwright OU 5 WQFS3	AK	1999	Remedial																				♦					PD/D
Standard Steel And Metal Salvage Yard, (USDOT)	AK	1996	Remedial										♦															C
Bunker Hill Mining And Metallurgical Complex	ID	1992	Remedial										♦															C
Idaho National Engineering Lab (USDOE) - OU 21	ID	1998	Remedial																			♦						O
Idaho National Engineering Laboratory - Pit 9, OU 7-10	ID	1993	Remedial													♦												PD/D
Idaho National Engineering Laboratory - Pit 9, OU 7-10	ID	1993	Remedial											♦														PD/D
Idaho National Engineering Laboratory - Power Burst Facility, OU 13	ID	1995	Remedial										♦															C

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REGION 10

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	Source Control: Ex Situ: Bioremediation (ex situ)	Ex Situ: Chemical Treatment	Ex Situ: Incineration (off site)	Ex Situ: Incineration (on site)	Ex Situ: Mechanical Soil Aeration	Ex Situ: Neutralization	Ex Situ: Open Burn/Open Detonation	Ex Situ: Physical Separation	Ex Situ: Soil Vapor Extraction	Ex Situ: Soil Washing	Ex Situ: Solidification/Stabilization	Ex Situ: Solvent Extraction	Ex Situ: Thermal Desorption	Ex Situ: Vitrification	In Situ: Bioremediation	In Situ: Chemical Treatment	In Situ: Dual-Phase Extraction	In Situ: Electrical Separation	In Situ: Phytoremediation	In Situ: Soil Flushing	In Situ: Soil Vapor Extraction	In Situ: Solidification/Stabilization	In Situ: Thermally Enhanced Recovery	In Situ: Vitrification	STATUS
Idaho National Engineering Laboratory - WAG 7, OU 7 - 8	ID	1995	Remedial																				♦					O
Pacific Hide & Fur Recycling	ID	1988	Remedial										♦															C
Pacific Hide & Fur Recycling (Amendment)	ID	1992	Remedial			♦																						C
U.S. DOE Idaho National Engineering And Environmental Lab - OU 23	ID	1992	Remedial			♦																						C
US DOE Idaho national Engineering Laboratory (USDOE) OU 3-13	ID	1999	Remedial										♦															PD/D
East Multnomah County Groundwater Contamination - Cascade Corporation, Troutdale Gravel Aquifer	OR	1997	Remedial																				♦					O
Gould, Inc.	OR	1988	Remedial										♦															C
Teledyne Wah Chang	OR	1990	Remedial										♦															C
Umatilla Army Depot Activity	OR	1992	Remedial	♦																								C
Umatilla Chemical Depot (Lagoons) - OU 1	OR	1993	Remedial										♦															C
Umatilla Chemical Depot (Lagoons) - OU 3	OR	1994	Remedial																			♦						O
Umatilla Chemical Depot (Lagoons) - OU 4	OR	1994	Remedial										♦															C
Umatilla Chemical Depot (Lagoons) - OU 6	OR	1994	Remedial										♦															O
Umatilla Chemical Depot (Lagoons) - OU 7	OR	1994	Remedial						♦																			O
Umatilla Chemical Depot (Lagoons) - Soil OU	OR	1992	Remedial	♦																								C
Union Pacific Railroad Tie Treatment - Vadose Zone Soils	OR	1996	Remedial															♦										PD/D
United Chrome Products, Inc.	OR	1986	Remedial																			♦						O
Advance Electroplating	WA	1995	Removal								♦																	C
Bonneville Power Administration - OU A	WA	1993	Remedial	♦																								C
Coal Creek Superfund Site	WA	1991	Remedial				♦																					C
Commencement Bay, Nearshore/Tideflats - Asarco Tacoma Smelter	WA	1991	Remedial			♦																						C
Commencement Bay, Nearshore/Tideflats - OU 3, Tacoma Tar Pits	WA	1988	Remedial										♦															C
Commencement Bay, South Tacoma Channel - Well 12a	WA	1985	Remedial																				♦					O

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REGION 10

Source Control Treatment Technology Summary Matrix (continued)

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE: Source Control – Ex Situ: Bioremediation (ex situ)	Chemical Treatment	Incineration (off site)	Incineration (on site)	Mechanical Soil Aeration	Neutralization	Open Burn/Open Detonation	Physical Separation	Soil Vapor Extraction	Soil Washing	Solidification/Stabilization	Solvent Extraction	Thermal Desorption	Vitrification	In Situ: Bioremediation	Chemical Treatment	Dual-Phase Extraction	Electrical Separation	Phytoremediation	Soil Flushing	Soil Vapor Extraction	Solidification/Stabilization	Thermally Enhanced Recovery	Vitrification	STATUS
Commencement Bay, South Tacoma Channel (Well 12a)	WA	1985	Remedial																				♦					C
Commencement Bay, South Tacoma Field	WA	1994	Remedial			♦																						C
Commencement Bay, South Tacoma Field	WA	1994	Remedial										♦															C
Drexler - Ramcor	WA	1991	Removal												♦													C
Fairchild Air Force Base - Priority 1 OUs (OU 2) Ft-1	WA	1993	Remedial														♦											O
Fairchild Air Force Base - Priority 2 Sites - Fuel Truck Maintenance Facility, Building 1060 (PS-10)	WA	1996	Remedial			♦																						C
Fairchild Air Force Base - Priority 2 Sites, OU 3, Sub Area PS-1	WA	1996	Remedial														♦											O
FMC Corp. (Yakima Pit)	WA	1990	Remedial				♦																					C
Fort Lewis Military Reservation - Landfill 4	WA	1993	Remedial																				♦					O
Fort Lewis Military Reservation - Solvent Refined Coal Plant	WA	1993	Remedial												♦													C
Frontier Hard Chrome, Inc.	WA	1988	Remedial										♦															PD/D
Hanford 1100-Area	WA	1993	Remedial			♦																						C
Hanford 200 Area	WA	1992	Removal																				♦					O
Hanford 200 Area	WA	1992	Removal										♦															O
Harbor Island (Lead) - Soil And Groundwater OU	WA	1993	Remedial												♦													PD/D
Lockheed Shipyard Facility/Harbor Island - OU 3	WA	1994	Remedial												♦													C
Naval Air Station, Whidbey Island - Ault Field, OU 5, Areas 1, 31, And 52	WA	1996	Remedial														♦											O
Northwest Transformer - Mission Pole	WA	1991	Remedial			♦																						C
Pacific Car And Foundry	WA	1992	Remedial										♦															C
Pacific Car And Foundry	WA	1992	Remedial	♦																								C
U.S. Naval Submarine Base - OU 1, Bangor Site A	WA	1992	Remedial									♦																C
U.S. Naval Submarine Base - OU 6 Site D & OU 2 Site F	WA	1994	Remedial	♦																								O
Wyckoff/Eagle Harbor - West Harbor OU (Amendment)	WA	1996	Remedial										♦															C

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REGION 1

Groundwater Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Groundwater Technologies: Air Stripping	Bioremediation (in situ) - Bioslurping	Bioremediation (in situ) - Biosparging	Bioremediation (in situ) - Groundwater	Chemical Treatment	Dual-Phase Extraction	In-Well Air Stripping	Permeable Reactive Barrier	Phytoremediation	STATUS
Linemaster Switch Corporation	CT	1993	Remedial						♦				O
Hocomonco Pond - ESD	MA	1985	Remedial			♦							O
Wells G&H - OU 1 (Wildwood Conservation Trust)	MA	1989	Remedial	♦									O
Loring AFB - OU 11, Fuels Tank Farm (FTF)	ME	1995	Removal				♦						O
Pease Air Force Base - Site 45	NH	1995	Remedial	♦									O
Pease Air Force Base - Zone 2	NH	1995	Remedial	♦									O
Savage Municipal Water Supply - OU 1, OK Tool Source Area	NH	1997	Remedial	♦									O
Somersworth Sanitary Landfill	NH	1994	Remedial								♦		D/BI
Tibbetts Road - OU 01	NH	1998	Remedial									♦	PD/D
Peterson/Puritan Inc. - OU 1, PAC Area	RI	1993	Remedial					♦					O

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REGION 2

Groundwater Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Groundwater Technologies: Air Stripping	Bioremediation (in situ) - Bioslurping	Bioremediation (in situ) - Biosparging	Bioremediation (in situ) - Groundwater	Chemical Treatment	Dual-Phase Extraction	In-Well Air Stripping	Permeable Reactive Barrier	Phytoremediation	STATUS
FAA Technical Center - Area B Navy Fire Testing Facility	NJ	1996	Remedial	♦									PD/D
FAA Technical Center - OU 1, Area D - Jet Fuel Farm	NJ	1989	Remedial			♦							O
Naval Air Engineering Center - Areas A And B Groundwater	NJ	1997	Remedial						♦				O
Naval Air Engineering Station Areas I and J Groundwater OU 26	NJ	1999	Remedial			♦							O
Naval Air Engineering Station, Site 28 - Soil And Groundwater OU	NJ	1997	Remedial	♦									O
Naval Weapons Station Earle (Site A) - OU 03	NJ	1998	Remedial	♦									PD/D
Woodland Route 532 Dump (Amendment)	NJ	1999	Remedial	♦									PD/D
Woodland Routes 72 Dump (Amendment)	NJ	1999	Remedial	♦									PD/D
Brookhaven National Laboratory (USDOE) - OU 4	NY	1996	Remedial	♦									O
Kentucky Avenue Wellfield - OU 3	NY	1996	Remedial	♦									PD/D
Pasley Solvents And Chemicals, Inc.	NY	1992	Remedial	♦									O
Plattsburgh AFB - Bldg. 2774, Ss-017	NY	1996	Removal	♦									O
Shore Realty (Formerly Applied Environmental Services) - Groundwater OU	NY	1991	Remedial			♦							O
Shore Realty (Formerly Applied Environmental Services) - OU 1	NY	1991	Remedial	♦									O
Sinclair Refinery - OU 2	NY	1991	Remedial	♦									O

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REGION 3

Groundwater Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Groundwater Technologies: Air Stripping	Bioremediation (in situ) - Bioslurping	Bioremediation (in situ) - Biosparging	Bioremediation (in situ) - Groundwater	Chemical Treatment	Dual-Phase Extraction	In-Well Air Stripping	Permeable Reactive Barrier	Phytoremediation	STATUS
Dover AFB - Target Area 2 Of Area 6	DE	1995	Remedial			♦							PD/D
NCR Corp.	DE	1991	Remedial	♦									O
Avco Lycoming	PA	1997	Remedial			♦							O
Avco Lycoming	PA	1997	Remedial	♦									PD/D
Brown's Battery Breaking Site - OU 2	PA	1992	Remedial								♦		PD/D
Burgess Brothers Landfill - OU 01	PA	1998	Remedial	♦									D/BI
Saegertown Industrial Area	PA	1993	Remedial	♦									PD/D
Tonolli Corp.	PA	1992	Remedial								♦		O
Arrowhead Associates/Scovill Corp ESD	VA	1998	Remedial								♦		PD/D
Naval Surface Warfare Center, Dahlgren, Site 12 - Chemical Burn Area	VA	1997	Remedial	♦									O

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NA - Information on the date of the action is not currently available.

REGION 4

Groundwater Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Groundwater Technologies: Air Stripping	Bioremediation (in situ) - Bioslurping	Bioremediation (in situ) - Biosparging	Bioremediation (in situ) - Groundwater	Chemical Treatment	Dual-Phase Extraction	In-Well Air Stripping	Permeable Reactive Barrier	Phytoremediation	STATUS
American Creosote Works OU2-Phase 1	FL	1994	Remedial						♦				O
American Creosote Works, Inc. - OU 2 Phase 2	FL	1994	Remedial			♦							PD/D
Cecil Field Naval Air Station - OU 08	FL	1998	Remedial	♦									O
Cecil Field Naval Air Station - OU 7, Site 16	FL	1999	Remedial	♦									O
Aberdeen Pesticide Dumps OU 5	NC	1999	Remedial									♦	PD/D
FCX - Statesville - OU 3	NC	1996	Remedial	♦									PD/D
USMC Camp Lejeune Military Base - OU 10, Site 35	NC	1995	Remedial							♦			O
Calhoun Park Area - OU 01	SC	1998	Remedial									♦	PD/D
CSX Mccormick Derailment Site	SC	NA	Removal			♦							O
Rochester Property	SC	1993	Remedial	♦									O
Savannah River Site (USDOE) C Area Burning/Rubble Pit 131-C (U)	SC	1999	Remedial	♦									O
Shuron Inc - OU 01	SC	1998	Remedial	♦									PD/D

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REGION 5

Groundwater Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Groundwater Technologies: Air Stripping	Bioremediation (in situ) - Bioslurping	Bioremediation (in situ) - Biosparging	Bioremediation (in situ) - Groundwater	Chemical Treatment	Dual-Phase Extraction	In-Well Air Stripping	Permeable Reactive Barrier	Phytoremediation	STATUS
Accra-Pac	IN	NA	Removal		♦								O
Accra-Pac	IN	NA	Removal	♦									D/BI
Conrail Rail Yard - OU 2	IN	1994	Remedial	♦									PD/D
Fisher-Calo	IN	1990	Remedial		♦								O
Wayne Waste Oil	IN	1990	Remedial		♦								O
Clare Water Supply	MI	1997	Remedial						♦				O
Electrovoice - OU 1	MI	1992	Remedial	♦									O
Thermo-Chem, Inc. - OU 1	MI	1991	Remedial	♦									O
Kummer Sanitary Landfill - OU 3 (Amendment)	MN	1996	Remedial			♦							C
Wright-Patterson Air Force Base - Groundwater OU 12	OH	1999	Remedial				♦						PD/D
Zanesville Well Field	OH	1991	Remedial	♦									O

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NA - Information on the date of the action is not currently available.

REGION 6

Groundwater Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Groundwater Technologies: Air Stripping	Bioremediation (in situ) - Bioslurping	Bioremediation (in situ) - Biosparging	Bioremediation (in situ) - Groundwater	Chemical Treatment	Dual-Phase Extraction	In-Well Air Stripping	Permeable Reactive Barrier	Phytoremediation	STATUS
Popile	AR	1993	Remedial			♦							PD/D
American Creosote Works, Inc. (Winnfield Plant)	LA	1993	Remedial			♦							O
Prewitt Abandoned Refinery	NM	1992	Remedial	♦									O
Tinker AFB - Soldier Creek And Building 3001	OK	1990	Remedial		♦								O
Air Force Plant 4 - Building 181	TX	1996	Remedial						♦				O
Petro-Chemical Systems, Inc. - OU 2	TX	1998	Remedial			♦							O

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NA - Information on the date of the action is not currently available.

REGION 7

Groundwater Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Groundwater Technologies: Air Stripping	Bioremediation (in situ) - Bioslurping	Bioremediation (in situ) - Biosparging	Bioremediation (in situ) - Groundwater	Chemical Treatment	Dual-Phase Extraction	In-Well Air Stripping	Permeable Reactive Barrier	Phytoremediation	STATUS
Peoples Natural Gas	IA	1991	Remedial	♦									PD/D
57th And North Broadway Streets Site - OU 01	KS	1998	Remedial							♦			PD/D
Ace Services	KS	1999	Remedial			♦							PD/D
Lake City Army Ammunition Plant (NW Lagoon) - OU 03	MO	1998	Remedial								♦		O
Hastings Groundwater Contamination - Hastings East Industrial Park Groundwater Zone, Former Naval Ammunition Depot	NE	NA	Removal	♦									O
Hastings Groundwater Contamination- Colorado Ave, OU1	NE	1991	Remedial	♦									O
Hastings Groundwater Contamination- Colorado Ave, OU1	NE	1991	Removal							♦			O

Status: **PD** = Predesign; **D** = Design; **D/I** = Designed but not Installed; **I** = Installed; **BI** = Being Installed; **O** = Operational; **C** = Complete
NA - Information on the date of the action is not currently available.

REGION 8

Groundwater Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	TECHNOLOGY TYPE									STATUS
				Groundwater Technologies: Air Stripping	Bioremediation (in situ) - Bioslurping	Bioremediation (in situ) - Biosparging	Bioremediation (in situ) - Groundwater	Chemical Treatment	Dual-Phase Extraction	In-Well Air Stripping	Permeable Reactive Barrier	Phytoremediation	
Chemical Sales Company - OU 1	CO	1991	Remedial	♦									O
Rocky Flats Plant (USDOE) - Buffer Zone	CO	1992	Remedial								♦		O
Sand Creek Industrial - OU 4	CO	1994	Remedial						♦				C
Burlington Northern (Somers Plant) - Groundwater	MT	1989	Remedial			♦							O
Idaho Pole Company	MT	1992	Remedial			♦							O
Libby Groundwater Contamination	MT	1989	Remedial			♦							O
Montana Pole And Treating Plant - Groundwater OU	MT	1993	Remedial			♦							O
Ellsworth AFB - OU 1	SD	1995	Remedial						♦				O
Monticello Mill Tailings (USDOE) - OU 03	UT	1998	Remedial								♦		O
F.E. Warren Air Force Base, OU2	WY	1997	Remedial								♦		O
Mystery Bridge Road/Highway 20 - OU 2	WY	NA	Removal	♦									C

Status: **PD** = Predesign; **D** = Design; **D/I** = Designed but not Installed; **I** = Installed; **BI** = Being Installed; **O** = Operational; **C** = Complete
NA - Information on the date of the action is not currently available.

REGION 9

Groundwater Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Groundwater Technologies: Air Stripping	Bioremediation (in situ) - Bioslurping	Bioremediation (in situ) - Biosparging	Bioremediation (in situ) - Groundwater	Chemical Treatment	Dual-Phase Extraction	In-Well Air Stripping	Permeable Reactive Barrier	Phytoremediation	STATUS
Phoenix Goodyear Airport Area (South Facility) - Subunit A	AZ	1996	Remedial	♦									C
Barstow Marine Corps Logistics Base - OU 01	CA	1998	Remedial	♦									O
Del Norte County Pesticide Storage Area	CA	1986	Remedial	♦									C
Fairchild Semiconductor (Mt. View) - Siemens/Sobrato (455 & 487 Middlefield Road)	CA	1993	Remedial	♦									O
Koppers - Oroville Plant	CA	1999	Remedial			♦							O
Travis AFB	CA	1998	Remedial				♦						O
Travis AFB	CA	1998	Remedial						♦				O

Status: **PD** = Predesign; **D** = Design; **D/I** = Designed but not Installed; **I** = Installed; **BI** = Being Installed; **O** = Operational; **C** = Complete
NA - Information on the date of the action is not currently available.

REGION 10

Groundwater Treatment Technology Summary Matrix

SITE NAME	STATE	FY	ACTION	Groundwater Technologies: Air Stripping	Bioremediation (in situ) - Bioslurping	Bioremediation (in situ) - Biosparging	Bioremediation (in situ) - Groundwater	Chemical Treatment	Dual-Phase Extraction	In-Well Air Stripping	Permeable Reactive Barrier	Phytoremediation	STATUS
Elmendorf AFB - OU 6 And Source Area Ss19, Perched Aquifer Groundwater at Sd15	AK	1997	Remedial						♦				O
Fort Richardson - OU B	AK	1997	Remedial						♦				O
Fort Richardson - OU B	AK	1997	Remedial	♦									O
Fort Wainwright - OU 2 - Building 1168 Leach Well	AK	1997	Remedial	♦									O
Fort Wainwright - OU 2 - DRMO Yard	AK	1997	Remedial	♦									O
Fort Wainwright - OU 3	AK	1996	Remedial	♦									O
Fort Wainwright - OU 4	AK	1996	Remedial	♦									O
Fort Wainwright OU 5 WQFS1	AK	1999	Remedial	♦									O
Fort Wainwright OU 5 WQFS2	AK	1999	Remedial	♦									O
Fort Wainwright OU 5 WQFS3	AK	1999	Remedial	♦									PD/D
East Multnomah County Groundwater Contamination - Cascade Corporation, Troutdale Gravel Aquifer	OR	1997	Remedial	♦									C
Fairchild Air Force Base - Priority 1 OUs (OU 2) Ft-1	WA	1993	Remedial	♦									O
Fort Lewis Military Reservation - Landfill 4	WA	1993	Remedial	♦									O
Naval Undersea Warfare Station (4 Areas) - OU 01	WA	1998	Remedial									♦	O

Status: **PD** = Predesign; **D** = Design; **D/I** = Designed but not Installed; **I** = Installed; **BI** = Being Installed; **O** = Operational; **C** = Complete
NA - Information on the date of the action is not currently available.

Appendix C

Treatment Trains with Innovative Technologies

Superfund Remedial Actions:

Treatment Trains with Innovative Treatment Technologies

Bioremediation Followed by		
Solidification/Stabilization	French Limited	TX
Solidification/Stabilization	Gulf Coast Vacuum Services - OU 1	LA
Solidification/Stabilization	Penta Wood Products - OU 01	WI
Solidification/Stabilization	Vogel Paint & Wax	IA
Soil Vapor Extraction	Fisher-Calo	IN
Soil Vapor Extraction	Wayne Waste Oil	IN
Air Sparging Followed by		
Soil Vapor Extraction	Cecil Field Naval Air Station - OU 7, Site 16	FL
Soil Vapor Extraction	FCX - Statesville - OU 3	NC
Soil Vapor Extraction	Fort Lewis Military Reservation - Landfill 4	WA
Soil Vapor Extraction	Kentucky Avenue Wellfield - OU 3	NY
Soil Vapor Extraction	Pease Air Force Base - Site 45	NH
Chemical Treatment Followed by		
Bioremediation	Macgillis and Gibbs/Bell Lumber and Pole- OU1	MN
Solidification/Stabilization	Palmetto Wood Preserving	SC
Thermally Enhanced Recovery Followed by		
Soil Vapor Extraction followed by Bioremediation	Petro-Chemical Systems, Inc. - OU 2	TX
Dual-Phase Extraction Followed by		
Bioremediation (in situ)	American Creosote Works OU2-Phase 1	FL
Soil Vapor Extraction	Fort Richardson - OU B	AK
Soil Vapor Extraction Followed by		
Soil Flushing (in situ)	Jadco-Hughes Facility	NC
Soil Washing Followed by		
Solidification/Stabilization	Springfield Township Dump	MI
Bioremediation	Cabot/Koppers - Koppers OU	FL
Thermal Desorption Followed by Dechlorination	Myers Property	NJ
Solvent Extraction Followed by		
Vitrification	Idaho National Engineering Laboratory - Pit 9, OU 7-10	ID
Solidification/Stabilization	Arctic Surplus	AK
Solidification/Stabilization	Carolina Transformer Co.	NC
Thermal Desorption Followed by		
Dechlorination	FCX - Statesville - OU 2	NC
Dechlorination	Smith'S Farm - OU 1 (Amendment)	KY
Soil Flushing (in situ) Followed by		
Bioremediation	Montana Pole And Treating Plant - Area Under Interstate 15/90	MT
Bioremediation	Peak Oil/Bay Drum - OU 1	FL
Physical Separation Followed by		
Incineration (off-site)	Arkwood Inc.	AR

Explanation of Appendix D: Summary of Status Report Updates, Changes, and Deletions

This appendix describes the updates, changes, and deletions made to the database supporting Treatment Technologies for Site Cleanup: Annual Status Report (ASR). The appendix is divided into nine tables, one for each edition of the ASR. Within each table is a description of the updates, changes, and deletions made to the database supporting the ASR from one edition to the next.

The information for the ASR database is collected primarily from Records of Decision (RODs), ROD amendments, Explanations of Significant Differences (ESDs), and contacts with the Remedial Project Managers (RPMs) for Superfund sites. The tables presented in this appendix show the updates changes and deletions made to each project in the ASR database. Due to the large number of new projects based on information gathered from RODs, ROD amendments, and ESDs published between editions of the ASR (133 for the 10th edition), the tables in Appendix D do not describe these new projects. The tables show updates, changes, and deletions to projects that were included in the database used to support the previous edition of the ASR. These updates, changes, and deletions are generated primarily through contacts with RPMs and review of earlier RODs, ROD amendments, and ESDs to identify changes in treatment remedies and errors in the database.

The purpose of Appendix D is to document changes in the ASR database and thereby document changes in treatment remedies at Superfund sites. For each updated, changed, or deleted project, the appendix lists: site identifying information; the specific update, change, or deletion; an explanation of why the update, change, or deletion was made; and a site contact, usually the RPM.

When new projects are discovered through site contacts, and these new projects have not yet been documented in a ROD, ROD amendment, or ESD, they are recorded in Appendix D with the specific treatment technology listed in the "Added" column. When a remedy is changed from a treatment remedy to one that does not include treatment, the project based on that remedy is listed in Appendix D with a "Yes" in the "Deleted" column. The non-treatment remedy replacing the treatment remedy is described in the "Comments" column. When a remedy is changed from one treatment technology to another treatment technology, the new technology is listed in the "Changed To" column.

The database supporting the ASR contains information about specific projects for the treatment of contamination sources and the in situ treatment of contaminated groundwater at Superfund sites. The database does not track other types of remedies, such as off-site disposal in a landfill or monitored natural attenuation. Therefore, when a remedy is changed from treatment to non-treatment, the project created in the database for that treatment remedy is deleted from the database. Appendix D also shows that project as deleted from the previous edition.

Each superfund site may have multiple waste types and multiple areas of contamination, requiring multiple, separate treatments. For each distinct waste type and each distinct area of contamination treated, the ASR database contains a separate treatment project. When a waste is treated through a treatment train, the ASR database contains a separate treatment project for each step in the treatment train. Appendix D reflects this organization of treatment remedies based on specific projects and may contain multiple rows for the same site. For example, at the Caroll and Dubies Sewage Disposal site in New York, a 1995 ROD indicated that three separate and distinct technologies, bioremediation, soil vapor extraction, and solidification/stabilization, would be used to treat three distinct wastes. Therefore, three separate projects were created in the ASR database for the Caroll and Dubies Sewage Disposal site. However, for all of these wastes, the remedy was changed to off-site disposal. Therefore, all three projects were deleted from the ASR database, and the Appendix D table for the tenth edition of the ASR contains three entries for the Caroll and Dubies Sewage Disposal site, one for each deleted project.

The tenth edition of the report adds information about 133 new treatment projects selected for remedial actions in FY 1998 and FY 1999 Records of Decision (RODs), ROD Amendments, and Explanations of Significant Differences (ESDs). These are not listed in Appendix D.

Tenth Edition (March 2001): Additions, Changes, and Deletions from the Ninth Edition (April 1999)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 9TH EDITION)	10TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	New Bedford, MA (04/06/90)	Solidification/Stabilization		Yes		RODs from FY 1998 and 1999 changed the remedy from on-site incineration followed by solidification/stabilization to off-site disposal due to community concerns. The incineration portion of the remedy was deleted in the eighth edition based on information provided by the site contact, and does not appear in this table.	Jim Brown 617-573-5779 brown.jim@epa.gov
1	Silresim Chemical, MA (09/19/91)	Solidification/Stabilization		Yes		Specified in a FY 1991 ROD as a contingent remedy to treat soils not effectively treated by soil vapor extraction, but never implemented. Soil vapor extraction treatment is currently treating soil effectively.	Mark Otis 978-318-8895 e-mail address not available
1	Loring Air Force Base - OU 10, Entomology Shop, ME (removal action, no ROD date available)	Bioremediation (in situ) - Bioventing			Soil Vapor Extraction	The site contact indicated that the remedy was changed because bioventing was determined to be unsuitable due to site hydrogeology.	Mike Napilinski 617-918-1268 napilinski.mike@epa.gov
2	Carroll & Dubies Sewage Disposal, NY (03/31/95)	Bioremediation (in situ) - Lagoon		Yes		A FY 1998 ESD changed the remedy to off-site treatment and disposal because additional site investigation revealed that the waste could be easily separated from the underlying soil. The type of off-site treatment has not been determined.	Maria Jon 212-637-3967 jon.maria@epa.gov
2	Carroll & Dubies Sewage Disposal, NY (03/31/95)	Soil Vapor Extraction		Yes		A FY 1998 ESD changed the remedy to off-site treatment and disposal because additional site investigation revealed that the waste could be easily separated from the underlying soil. The type of off-site treatment has not been determined.	Maria Jon 212-637-3967 jon.maria@epa.gov
2	Carroll & Dubies Sewage Disposal, NY (03/31/95)	Solidification/Stabilization		Yes		A FY 1998 ESD changed the remedy to off-site treatment and disposal because additional site investigation revealed that the waste could be easily separated from the underlying soil. The type of off-site treatment has not been determined.	Maria Jon 212-637-396 jon.maria@epa.gov
2	Ellis Property, NJ (09/30/92)	Solidification/Stabilization		Yes		The site contact indicated that the remedy was changed to off-site disposal because additional site investigation revealed that the contaminant levels were lower than expected.	Richard Ho 212-637-4372 ho.richard@epa.gov
2	Ewan Property - OU 2, NJ (09/29/88)	Chemical Treatment - Groundwater		Yes		The site contact indicated that the remedy was changed to groundwater pump-and-treat because treatability studies indicated that in situ chemical treatment was not effective.	Stephen Cipot 212-637-4411 cipot.stephen@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Fried Industries, NJ (6/27/94)	Solidification/Stabilization		Yes		The site contact indicated that the remedy was changed to off-site disposal because additional site investigation revealed large amounts of contaminated debris. The use of solidification/ stabilization on this debris would have been impractical.	Tom Porucznik 212-637-4370 porucznik.tom@epa.gov
2	GCL Tie And Treating - OU 2, NY (3/31/95)	Thermal Desorption		Yes		The site contact indicated that the sediments of OU 2 have been combined with the soils of OU 1 for treatment using thermal desorption. The work is documented in the 10th edition of the ASR as a single project. Therefore, the OU 2 project has been deleted.	Janet Cappelli 212-637-4270 cappelli.janet@epa.gov
2	GE Wiring Devices, PR (9/30/88)	Soil Washing			Incineration (off-site)	A FY 1999 ROD amendment changed the remedy because the cost of soil washing was too high.	Caroline Kwan 212-637-4275 kwan.caroline@epa.gov
2	Lipari Landfill, NJ (9/30/85)	Project not in 9th edition of the ASR. Original ROD did not include this project.	Dual-Phase Extraction			The site contact indicated that dual-phase extraction was added at this site to remove insoluble volatile organic compounds.	Fred Cataneo 212-637-4428 cataneo.fred@epa.gov
2	Reynolds Metals Company - Study Area, NY (09/27/93)	Thermal Desorption			Incineration (off-site)	The site contact indicated that the remedy was changed from on-site thermal desorption to off-site incineration because the cost of thermal desorption was too high.	Anne Kelly 212-637-4264 kelly.anne@epa.gov
2	Tutu Well Field - VI (8/5/96)	Bioremediation (in situ) - Other		Yes		ROD was misinterpreted. The technology used at the site was soil vapor extraction. This is not a distinct project, it is part of the Tutu Well Field Esso project, which is already listed in the ASR database.	Caroline Kwan 212-637-4275 kwan.caroline@epa.gov
3	Avco Lycoming, PA (12/30/96)	Chemical Treatment - Groundwater			Bioremediation (in situ) - Groundwater	ROD was misinterpreted. Technology used stimulates microbes to create an environment in which hexavalent chromium will be reduced to its trivalent state. This technology is more accurately identified as bioremediation.	Jill Lowe 215-814-5336 lowe.jill@epa.gov
3	Brodhead Creek, PA (3/29/91)	Incineration (off-site)		Yes		ROD was misinterpreted. Incineration is of non-aqueous phase liquids collected through thermally enhanced recovery process, which is considered treatment of residuals, and not source treatment.	John Banks 215-814-3214 banks.john-d@epa.gov
3	Cryochem, Inc. - OU 3, PA (9/30/91)	Soil Vapor Extraction		Yes		A FY 1998 ESD eliminated the soil vapor extraction portion of the remedy because soil sampling showed that contaminant concentrations were below remediation goals and soil gas assessment showed that the contaminant levels were below typical levels for effective soil vapor extraction treatment.	Joseph McDowell 215-566-3192 mcdowell.joseph@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
3	Delaware Sand & Gravel Landfill, DE (9/30/93)	Incineration (off-site)			Soil Vapor Extraction	The site contact indicated that the remedy was changed because the cost of incineration was too high.	Philip Rotstein 215-814-3232 rotstein.phil@epa.gov
3	Douglassville Disposal, PA (6/30/89)	Incineration (off-site)		Yes		A FY 1999 ROD amendment changed the remedy from a treatment train of incineration followed by solidification/ stabilization to solidification/stabilization only, because this technology was determined to be as effective and less expensive.	Victor J. Janosik 215-814-3217 janosik.victor@epa.gov
3	Hunterstown Road, PA (8/2/93)	Incineration (off-site)		Yes		The site contact indicated that this remedy was not implemented because additional site investigations revealed that treatment was not required before off-site disposal of the waste.	John Banks 215-814-3214 banks.john-d@epa.gov
3	North Penn Area 6, PA (9/29/95)	Thermally Enhanced Recovery (Hot Air Injection)		Yes		The site contact indicated that treatability testing revealed that treatment goals could not be met. A replacement remedy has not yet been selected.	Gregory Ham 215-566-3194 ham.greg@epa.gov
3	Ordnance Works Disposal Areas, WV (9/29/89)	Bioremediation (ex situ) - Land Treatment			Thermal Desorption	A FY 1999 ROD changed the treatment train of bioremediation followed by solidification/stabilization to thermal desorption because treatability studies revealed that the remedy could not meet cleanup goals.	Chris Matta 215-814-2317 matta.christian@epa.gov
3	Ordnance Works Disposal Areas, WV (9/29/89)	Solidification/Stabilization			Thermal Desorption	A FY 1999 ROD changed the treatment train of bioremediation followed by solidification/stabilization to thermal desorption because treatability studies revealed that the remedy could not meet cleanup goals.	Chris Matta 215-814-2317 matta.christian@epa.gov
3	Whitmoyer Laboratories - OU 3, PA (12/31/90)	Bioremediation (ex-situ) - Other			Thermal Desorption	The site contact indicated that the remedy was changed because additional site investigations revealed arsenic contamination, which could not be effectively treated with bioremediation.	Christoper Corbett 215-814-3220 corbett.chris@epa.gov
4	Aberdeen Pesticide Dumps, NC (9/30/91)	Incineration (off-site)			Thermal Desorption	The site contact indicated that the remedy was changed due to public protest. The remedy change will be documented in a future ROD amendment.	Randy McElveen 919-733-2801 e-mail address not available
4	American Creosote Works - OU 2 Phase 1, FL (2/3/94)	Project not in 9th edition of the ASR. Original ROD did not include this project.	Dual-Phase Extraction			ROD was misinterpreted.	Mark Fite 404-562-8927 fite.mark@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
4	Cape Fear Wood Preserving, NC (6/30/89)	Solidification/Stabilization		Yes		This remedy was part of a treatment train including thermal desorption. The site contact indicated that this remedy was not implemented because thermal desorption treatment met the cleanup goals without solidification/stabilization.	Jon Bornholm 404-562-8820 bornholm.jon@epa.gov
4	Cecil Field Naval Air Station - OU 2, Site 5, FL (6/24/96)	Air Sparging (in situ) - Groundwater		Yes		The site contact indicated that the remedy was changed to monitored natural attenuation because additional site investigations revealed contaminant concentrations much lower than expected.	Debbie Vaughn-Wright 404-562-8539 vaughn-wright.debbie@epa.gov
4	Cecil Field Naval Air Station - OU 2, Site 5, FL (6/24/96)	Bioremediation (ex situ) - Other			Incineration (off-site)	The site contact indicated that the remedy was changed to monitored natural attenuation because additional site investigations revealed contaminant concentrations much lower than expected.	Debbie Vaughn-Wright 404-562-8539 vaughn-wright.debbie@epa.gov
4	Creotox Chemical Products	Bioremediation (ex situ) - Land Treatment		Yes		The site contact indicated that the remedy was changed to off-site incineration because bioremediation could not meet the cleanup goals.	Samantha Urquhart-Foster 404-562-8760 urquhart-foster.samantha@epa.gov
4	Fullco Lumber Company, AL (5/8/95)	Bioremediation (ex situ) - Other		Yes		A report generated for the site indicated that bioremediation could not meet cleanup goals. A replacement remedy has not yet been selected.	Waynon Johnson 404-562-8769 johnson.waynon@epa.gov
4	Chevron Chemical Company, FL (5/22/96)	Air Sparging (in situ) - Groundwater		Yes		The site contact indicated that the remedy was unnecessary because monitored natural attenuation effectively met cleanup goals.	Bill Denman 404-562-8939 denman.bill@epa.gov
4	Chevron Chemical Company, FL (5/22/96)	Permeable Reactive Barrier		Yes		The site contact indicated that the remedy was unnecessary because monitored natural attenuation effectively met cleanup goals.	Bill Denman 404-562-8939 denman.bill@epa.gov
4	General Electric Company - Shepard Farm Site, NC (9/29/95)	Bioremediation (in situ) - Groundwater		Yes		The site contact indicated that the remedy was changed to pump-and-treat of groundwater because treatability testing indicated that bioremediation was not effective.	Giezelle Bennett 404-562-8824 bennett.giezelle@epa.gov
4	Palmetto Wood Preserving, SC (9/30/87)	Project not in 9th edition of the ASR. Original ROD did not include this project.	Chemical Treatment	Yes		The site contact indicated that chemical treatment was added to reduce chromium to its trivalent state prior to treatment by solidification/stabilization.	Al Cherry 404-562-8828 cherry.al@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
4	Tower Chemical Co., FL (7/9/87)	Incineration (on-site)		Yes		The site contact indicated that additional site investigations revealed different contaminants than expected and that incineration would not be appropriate. A revised remedy for the site has not yet been developed.	Galo Jackson 404-562-8937 jackson.galo@epa.gov
5	American Chemical Services, Inc., IN (9/30/92)	Thermal Desorption		Yes		A FY 1999 ROD changed the remedy to installation of an impermeable cap and off-site disposal of some wastes because additional site investigations revealed additional volumes of contaminated soil and debris, making thermal desorption impractical.	Kevin Adler 312-886-7078 adler.kevin@epa.gov
5	Conrail Rail Yard - OU 2, IN (9/9/94)	Soil Vapor Extraction		Yes		The site contact indicated that additional site investigations revealed that contaminant concentrations were lower than expected and soil vapor extraction was unnecessary.	Brad Bradley 312-886-4742 bradley.brad@epa.gov
5	Tar Lake, MI (9/29/92)	Solidification/Stabilization			Thermal Desorption	The site contact indicated that the remedy was changed to reduce costs.	Thomas Bloom 312-886-1967 bloom.thomas@epa.gov
5	Koppers Coke - Groundwater OU, MN (4/21/94)	Bioremediation (in situ) - Groundwater		Yes		The site contact indicated that the remedy was replaced with monitored natural attenuation because treatability testing revealed that bioremediation was not increasing the rate of degradation of contaminants.	Mark Rys 651-296-7706 mark.rys@pca.state.mn.us
5	Macgillis And Gibbs/ Bell Lumber And Pole - OU 1, MN (12/30/92)	Incineration (on-site)			Chemical Treatment Followed by Bioremediation	A FY 1999 ROD amendment changed the remedy to a treatment train consisting of chemical treatment followed by bioremediation (biopile) because incineration was too expensive and difficult to implement.	Darryl Owens 312-886-7089 owens.darryl@epa.gov
5	Macgillis And Gibbs/ Bell Lumber And Pole - OU 3, MN (9/22/94)	Incineration (on-site)		Yes	Chemical Treatment Followed by Bioremediation	A FY 1999 ROD amendment changed the remedy to a treatment train consisting of chemical treatment followed by bioremediation (biopile) because incineration was too expensive and difficult to implement.	Darryl Owens 312-886-7089 owens.darryl@epa.gov
5	Moss-American, WI (9/27/90)	Bioremediation (ex situ) - Slurry Phase			Thermal Desorption	A FY 1998 ROD replaced the treatment train of soil washing followed by slurry phase bioremediation with thermal desorption because the original remedy could not meet cleanup goals. The bioremediation project was changed to thermal desorption and the soil washing project was deleted.	Russell Hart 312-886-4844 hart.russell@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
5	Moss-American, WI (9/27/90)	Soil Washing		Yes		A FY 1998 ROD replaced the treatment train of soil washing followed by slurry phase bioremediation with thermal desorption because the original remedy could not meet cleanup goals. The bioremediation project was changed to thermal desorption and the soil washing project was deleted.	Russell Hart 312-886-4844 hart.russell@epa.gov
5	Refuse Hideaway Landfill, WI (6/28/95)	Bioremediation (in situ) - Groundwater		Yes		The site contact indicated that the remedy was changed to monitored natural attenuation because the contaminants are naturally attenuating.	Anthony Rutter 312-886-8961 rutter.anthony@epa.gov
6	Air Force Plant 4 - Building 181, TX (8/26/96)	Soil Vapor Extraction		Yes		The site contact indicated that the remedy was changed to dual phase extraction and combined with another project at the site already listed in the ASR.	George Walters 937-255-7716 george.walters@wpafb.af.mil
6	Atchison, Topeka, & Santa Fe Clovis/Santa Fe Lake - Tph Soil, NM (9/23/98)	Bioremediation (in situ) - Other		Yes		The site contact indicated that contaminated soil was combined with sediments in an existing ex-situ bioremediation unit at the site. No information is currently available on why this change occurred.	Tetra Sanchez 214-665-6686 sanchez.tetra@epa.gov
6	Baldwin Waste Oil, TX (7/1/92)	Bioremediation (in situ) - Other			Bioremediation (ex situ) - Land Treatment	ROD was misinterpreted.	Gary Guerra 214-665-3120 guerra.gary@epa.gov
6	Double Eagle Refinery Co., OK (9/28/92)	Project not in 9th edition of the ASR. Original ROD did not include this project.	Neutralization			ROD was misinterpreted.	Phillip Allen 214-665-8516 allen.phillip@epa.gov
6	Oklahoma Refining Company - Hazardous Landfill, OK (6/9/92)	Bioremediation (in situ) - Other			Bioremediation (ex situ) - Land Treatment	ROD was misinterpreted.	Earl Hendrick 214-665-8519 hendrick.earl@epa.gov
6	Texarkana Wood Preserving, TX (9/25/90)	Incineration (on-site)		Yes		A FY 1998 ROD changed the remedy to on-site containment through capping because of community concerns.	Earl Hendrick 214-665-8519 hendrick.earl@epa.gov
6	United Creosoting Co., TX (9/29/89)	Solvent Extraction		Yes		A FY 1998 ROD amendment changed the remedy from a treatment train of solvent extraction followed by incineration to off-site disposal because the cost was too high and the capacity of the treatment unit was too small.	Earl Hendrick 214-665-8519 hendrick.earl@epa.gov

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Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
6	United Creosoting Co., TX (9/29/89)	Incineration (off-site)		Yes		A FY 1998 ROD amendment changed the remedy from a treatment train of solvent extraction followed by incineration to off-site disposal because the cost was too high and the capacity of the solvent extraction treatment unit was too small.	Earl Hendrick 214-665-8519 hendrick.earl@epa.gov
6	Prewitt Abandoned Refinery, NM (9/30/92)	Dual Phase Extraction			Air Sparging	ROD was misinterpreted.	Gregory Lyssy 214-665-8317 lyssy.gregory@epa.gov
7	Hastings Groundwater Contamination- Colorado Ave., OU 1, NE (09/30/91)	Project not in 9th edition of the ASR.	Air sparging (in situ) - Groundwater			ROD was misinterpreted.	Darrell Sommerhauser 913-551-7711 sommerhauser.darrell@epa.gov
7	Hastings Groundwater Contamination- Colorado Ave., OU 1, NE (09/30/91)	Project not in 9th edition of the ASR.	In-Well Air Stripping			ROD was misinterpreted.	Darrell Sommerhauser 913-551-7711 sommerhauser.darrell@epa.gov
7	Midwest Manufacturing/North Farm, IA (2/28/93)	Bioremediation (in situ) - Other		Yes		ROD was misinterpreted.	Diane Easley 913-551-7797 easley.diane@epa.gov
7	Sherwood Medical Co., NE (9/5/1995)	Soil Vapor Extraction (ex situ)			Mechanical Soil Aeration	The site contact indicated that, after mechanical soil aeration was conducted in preparation for ex situ soil vapor extraction, the contaminant concentrations met cleanup goals and soil vapor extraction was unnecessary.	Steve Auchterlonie 913-551-7778 auchterlonie.steve@epa.gov
8	Broderick Wood Products, CO (9/24/91)	Incineration (off-site)		Yes		ROD was misinterpreted.	Armando Saenz 313-302-6359 saenz.armando@epa.gov
8	Lockheed/Martin - Denver Aerospace, CO (9/24/90)	Solidification/Stabilization		Yes		The site contact indicated that the remedy was not required because additional site investigation revealed contaminant levels were below cleanup goals.	Charles Johnson 303-692-3348 Johnson.Charles@State.CO.US
8	Rocky Flats Plant - Buffer Zone, CO (08/10/92)	Soil Vapor Extraction			Permeable Reactive Barrier	The site contact indicated that the remedy was changed because additional contamination was found that was not amenable to soil vapor extraction, including dense non-aqueous phase liquids.	Norma Casaneda 303-966-4226 casaneda.norma@epa.gov
8	Rocky Mountain Arsenal - Onpost OU, Hex Pits, CO (6/11/96)	Thermal Desorption			Thermally Enhanced Recovery	ROD was misinterpreted.	Kerry Guy 303-312-7288 guy.kerry@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Tenth Edition (March 2001) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
8	Rocky Mountain Arsenal - Onpost OU, CO (6/11/96)	Soil Washing		Yes		The site contact indicated that this remedy was specified as a contingent remedy, but never implemented.	Kerry Guy 303-312-7288 guy.kerry@epa.gov
8	Sand Creek Industrial, OU 4, CO (4/2/94)	Soil Vapor Extraction		Yes		ROD was misinterpreted.	Erna Waterman 303-312-6762 waterman.erna@epa.gov
8	Summitville Mine - OU 2, CO (12/15/94)	Project not in 9th edition of the ASR.	Neutralization			ROD was misinterpreted.	Victor Ketellaper 303-312-6578 ketellapper.victor@epa.gov
8	Utah Power & Light/American Barrel, UT (7/7/93)	Solidification/Stabilization		Yes		ROD was misinterpreted.	Paula Schmittdiel 303-312-6861 schmittdiel.paula@epa.gov
9	Navajo Toxaphene, AZ (1/1/95)	Bioremediation (in situ) - Other			Bioremediation (ex situ) - Other	ROD was misinterpreted.	Robert Mandel 415-744-2290 mandel.bob@epa.gov
9	Williams Air Force Base - OU 3, AZ (12/30/92)	Bioventing			Soil Vapor Extraction	The site contact indicated that the remedy was changed because bioventing could not meet cleanup goals.	Sean Hogan 415-744-2334 hogan.sean@epa.gov
10	Queen City Farms, WA (10/24/86)	Solidification/Stabilization		Yes		The site contact indicated that the project was solidification only, and no stabilization occurred. Solidification only projects are not currently tracked in the ASR.	Neil Thompson 206-553-7177 thompson.neil@epa.gov

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Ninth Edition (April 1999): Additions, Changes, and Deletions from the Eighth Edition (November 1996)

The ninth edition of the report adds information about 42 treatment selected for remedial actions in FY 1996 and FY 1997 RODs, – treatment technologies non-Superfund, and innovative technologies selected for two RCRA corrective actions. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	Beacon Heights Landfill, CT (09/28/90)	Incineration (off site)		Yes		At $20 billion, incineration was considered cost-prohibitive. In addition, the community was concerned about the safety of transporting 22 acres of material by truck over switchback mountain roads.	Elise Jakabhazy 617-573-5760
1	Cannon Engineering - Plymouth OU, MA (03/31/88)	Incineration (off site)		Yes		About 264 tons of soil contaminated with lead and PCBs were disposed of at the Adams Center Sanitary Landfill in Fort Wayne, Indiana. Incineration was never used. PRP's contractor was allowed to put soil in a landfill without ROD amendment or ESD.	Dan Coughlin 617-573-9621
1	Charles George Reclamation Trust Landfill, MA (09/29/88)	Solidification/ stabilization		Yes		The contaminated area was capped instead of using solidification/stabilization. The estimated volume of contaminated media had decreased; the technology was no longer effective.	Elaine Stanley 617-223-5515
1	Iron Horse Park - OU 1, MA (09/15/88)	Bioremediation (ex situ) - land treatment		Yes		Land treatment was changed to asphalt batching off site at a state-permitted soil recycling facility. Bioremediation was taking longer than expected; treatment goals could not be met. An ESD was issued in October 1997.	Don McElroy 617-223-5571
1	Salem Acres, MA (03/25/93)	Solidification/ stabilization		Yes		Contaminated soils were excavated and hauled from the site instead of using solidification/stabilization. The estimated volume of contaminated media had decreased; the technology was no longer effective.	Elaine Stanley 617-223-5515
1	Sullivan's Ledge, MA (06/28/89)	Solidification/ stabilization		Yes		Stabilization is no longer part of the remedy. An ESD was issued in 1996 to eliminate that requirement.	Dave Lederer 617-573-9665
1	Sullivan's Ledge, MA (09/27/91)	Solidification/ stabilization		Yes		Stabilization is no longer part of the remedy. An ESD was issued in 1996 to eliminate that requirement.	Dave Lederer 617-573-9665
1	Loring AFB - OU 11, Vehicle Maintenance Building, ME (05/20/96)	Soil vapor extraction		Yes		Never implemented. Soils were excavated and connected to the base laundry SVE; soils were put into rolloff containers with PVC pipe.	Mike Nalipinski 617-223-5503

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	O'Connor, ME (09/27/89)	Incineration (off site)		Yes		Problems included high cost for implementation of the technology and equipment or site problems. Contaminated soil was landfilled off site. An ESD was issued on 07/11/94.	Ross Gilleland 617-573-5766
1	O'Connor, ME (09/27/89)	Solidification/ stabilization		Yes		The solidification/ stabilization remedy option provided treatment of lead if incineration was chosen. Incineration was not selected as a remedy. Contaminated soil was landfilled off site. An ESD was issued on 07/11/94.	Ross Gilleland 617-573-5766
1	Union Chemical, ME (12/27/90)	Incineration (off site)		Yes		Misinterpretation of the ROD. The 1990 ROD selected thermal desorption. That remedy was subsequently changed to SVE in 1994. An ESD was issued in April 1994. See page D-36 for more information.	Terrence Connelly 617-573-9638
1	Union Chemical, ME (12/27/90)	Solidification/ stabilization		Yes		Misinterpretation of the ROD. The 1990 ROD selected thermal desorption. That remedy was subsequently changed to SVE in 1994. An ESD was issued in April 1994. See page D-36 for more information.	Terrence Connelly 617-573-9638
1	Ottati & Goss/Kingston Steel Drum - OU 4, NH (01/16/87)	Incineration (on site)			Thermal desorption	A change in cleanup level may be necessary under new risk guidance issued since the ROD was signed. Thermal desorption is more cost effective; the volume of contaminated media had increased. A change in future use from residential to nonresidential would require a ROD amendment.	Richard Goehlert 617-573-5742
1	South Municipal Water Supply Wells, NH (09/27/89)	Soil vapor extraction		Yes		A second ESD, issued in February 1997, granted a technical impracticality waiver. The waiver eliminated SVE because of the presence of DNAPLs. The SVE system has been shut down.	Roger Duwart 617-573-9628 Tom Andrews (NHDES) 603-271-2910
1	South Municipal Water Supply Wells, NH (09/27/89)	In situ air stripping (air sparging)		Yes		The air injection well was not installed deep enough to deliver air below the water table. Because of installation of deeper air injection wells would have caused penetration of a confining layer, that activity was not performed. An ESD was issued on 02/03/97.	Roger Duwart 617-573-9628 Tom Andrews (NHDES) 603-271-2910
1	Davis Liquid Waste, RI (09/29/87)	Solidification/ stabilization		Yes		Solidification/stabilization was proposed in the ROD as a treatment for the residues of incineration, but thermal desorption was used instead of incineration. Therefore, solidification/stabilization was not used. No ROD amendment or ESD was needed.	Neil Handler 617-573-9636

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
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2	Cosden Chemical Coatings Corp., NJ (09/30/92)	Solidification/ stabilization		Yes		The estimated volume of contaminated media had decreased; the technology was no longer effective. An ESD is to be issued in the near future.	Edward Finnerty 212-637-4367
2	De Rewal Chemical Co., NJ (09/29/89)	Solidification/ stabilization		Yes		The treatability study indicated that leaching inorganics from the solidified mass would increase contamination of the groundwater. An ESD, issued on 06/12/97, eliminates solidification/ stabilization and provides for off-site disposal.	Lawrence Granite 212-637-4423
2	Ellis Property, NJ (09/30/92)	Incineration (off site)			Solidification/ stabilization	Off-site incineration never was used because of high cost; chemical stabilization was used instead.	Richard Ho 212-637-4372
2	Kauffman & Minteer, NJ (09/27/96)	Incineration (off site)		Yes		No hazardous waste has been detected at this OU. The nonhazardous waste currently is being excavated and disposed of with no treatment. Additional characterization currently is being performed.	Paolo Pascetta 212-637-4383
2	Reich Farms, NJ (09/30/88)	Incineration (off site)		Yes		This was a contingency in the ROD. The ROD specified enhanced volatilization followed by either incineration or on-site disposal. All soil was treated successfully by enhanced volatilization and thus incineration was not necessary.	Jonathan Gorin 212-637-4361
2	Renora, Inc., NJ (09/29/87)	None				Original remedy was not listed in the ASR. The 1987 ROD selected bioremediation (in situ) for groundwater. It was cancelled because treatability studies showed bioremediation to be ineffective in treating PAH-contaminated soils. A ROD Amendment signed on 09/30/94 changed the remedy to off-site disposal.	Jonathan Gorin 212-637-4361
2	Roebling Steel Co., NJ (03/29/90)	Solidification/ stabilization		Yes		Solidification/stabilization was considered and rejected because of the high cost of cleaning up a large area of contamination (10 acres). A ROD amendment is expected in December 1998.	Tamara Rossi 212-637-4368
2	Roebling Steel Co., NJ (09/26/91)	Solidification/ stabilization		Yes		Solidification/stabilization was considered and rejected because of the high cost of cleaning up a large area of contamination (10 acres). A ROD amendment is expected in December 1998.	Tamara Rossi 212-637-4368
2	Swope Oil & Chemical, NJ (09/27/91)	Incineration (off site)		Yes		Remedy included only SVE treatment, and no off-site incineration was conducted. Misinterpretation of ROD.	Joseph Gowers 212-637-4413

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
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2	Waldick Aerospace Devices, Inc., NJ (03/29/91)	Incineration (off site)		Yes		Misinterpretation of the ROD. Off-site incineration never was implemented. The ROD specified on-site thermal treatment or thermal desorption.	Daniel Weissman 212-637-4384 George Buc (USACE) 908-389-3040 Dave Modricker (USACE) 717-748-4505
2	Waldick Aerospace Devices, Inc., NJ (09/29/87)	Solidification/ stabilization		Yes		Misinterpretation of the ROD.	Daniel Weissman 212-637-4384
2	White Chemical Corp., NJ (09/26/91)	Solidification/ stabilization		Yes		Misinterpretation of the ROD. ROD specified that the site should be stabilized, referring to the site stabilization process performed during a previous remedial action. This did not mean treatment using stabilization/solidification.	Betsy Donovan 212-637-4369
2	Brookhaven National Laboratory (USDOE) - OU 4, NY (03/25/96)	This is an FY96 ROD that was not listed in the eighth edition.	Soil vapor extraction			Soil vapor extraction was added to enhance the existing in situ air stripping system.	Mary Logan 212-637-4321
2	Circuitron Corp., NY (03/29/91)	Incineration (off site)		Yes		Misinterpretation of the ROD. Soil was excavated and transported to an approved RCRA treatment and disposal facility. Incineration (off site) was selected as the method of treatment to develop a conservative cost estimate.	Sharon Trocher 212-637-3965
2	Hooker (102nd Street Landfill), NY (09/26/90)	Incineration (off site)		Yes		Original ROD specified incineration of sediments outside slurry wall. Slurry has been repositioned to contain any migration of NAPL plumes. The site will be capped instead. ROD Amendment issued 06/9/95.	Paul Olivo 212-637-4280
2	Love Canal - 93rd St. School, NY (09/26/88)	Solidification/ stabilization		Yes		Residents did not want any materials treated on site. Materials were disposed of off site instead. A ROD amendment was issued in 05/91.	Damian Duda 212-637-4269
2	Marathon Battery Corp., NY (09/30/88)	Solidification/ stabilization		Yes		All three solidification/ stabilization projects were conducted as one project, even though three RODs were issued. The work is documented in the ASR as a single project. Therefore, the two other projects have been deleted.	Pam Tames 212-637-4255

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Marathon Battery Corp., NY (09/30/89)	Solidification/ stabilization		Yes		All three solidification/ stabilization projects were conducted as one project, even though three RODs were issued. The work is documented in the ASR as a single project. Therefore, the two other projects have been deleted.	Pam Tames 212-637-4255
2	Mattiace Petrochemicals - OU 1, 5, and 6, NY (06/27/91)	Incineration (off site)		Yes		The ROD identified incineration as a possible method of treatment, but incineration was not the selected remedy.	Edward Als 212-637-4272
2	Olean Well Field - OU 2, NY (09/30/96)	In situ air stripping (air sparging)		Yes		Air sparging was considered for the dry cleaning. A pilot test demonstrated that air sparging was not feasible because of site conditions. Contaminated soil will be excavated instead (a contingency in the ROD, so no ESD or ROD amendment is necessary).	Thomas Taccone 212-637-4281
2	Solvent Savers, NY (09/30/90)	Thermal desorption			Soil vapor extraction	SVE is being conducted as a pilot study, but thermal desorption may be used in the future.	Lisa Wong 212-637-4267
3	Delaware Sand & Gravel Landfill - OU 4 and OU 5, DE (09/30/93)	Soil vapor extraction			Bioremediation (in situ) - bioventing	Treating soil with SVE followed by bioventing would not have enhanced the rate of removal of VOCs from soil. Therefore, bioventing was used without SVE. The remedy was a contingency in the ROD.	Eric Newman 215-814-3237
3	E.I. DuPont-Newport Site, DE (09/23/93)	None				Original remedy was not listed in the ASR. The 1993 ROD selected solidification/stabilization (in situ). However, the waste was much deeper than originally estimated. Due to the increased volume of waste, the cleanup costs were significantly higher than cited in the 1993 ROD. On 08/16/95 EPA issued and ESD to change the remedy to containment with pump-and-treat for groundwater.	Lisa Brown 215-814-5528
3	Halby Chemical Co. - OU 1, Process Plant Area, DE (06/28/91)	Solidification/ stabilization			Chemical treatment	Misinterpretation of ROD; in situ chemical oxidation was used.	Eric Newman 215-814-3237
3	Aberdeen Proving Ground (Edgewood Area) J-Field Soil OU, MD (09/27/96)	This is an FY96 ROD that was not listed in the eighth edition.			Phyto-remediation	Incineration and solidification/stabilization, provided for in the original ROD, was considered dangerous because of the presence of unexploded ordnance. A ROD amendment is to be issued in the near future for a change to phytoremediation.	Steven R. Hirsh 215-566-3352

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
3	Mid-Atlantic Wood Preservers, MD (12/31/90)	Solidification/ stabilization		Yes		The remedy was a contingency in the ROD. Solidification/ stabilization was to be used only if the level of arsenic was above 1000 mg/kg. Results of soil analysis on all samples at the site show levels of arsenic below 1,000 mg/kg.	Eric Newman 215-814-3237
3	Aladdin Plating, PA (09/27/88)	Solidification/ stabilization		Yes		A vendor demonstration of electrokinetics to treat contaminated groundwater and soils will continue. A subsequent ROD issued on 12/30/93 requires institutional controls and monitoring, but no solidification/stabilization.	Gregory D. Hamm 215-566-3194
3	Berks Sand Pit, PA (09/29/88)	Incineration (off site)		Yes		The source of contamination in sediments is being eliminated because of lowering of the water table, eliminating the need for excavation and incineration (off site) of sediments. An ESD has been proposed and will be made final after a public comment period of 30 days.	Bruce Rundell 215-566-3317
3	Brown's Battery Breaking Site - OU 2, PA (07/02/92)	Plasma high- temperature recovery		Yes		Problems with implementation include high cost and equipment or site problems.	Richard Watman 215-566-3219
3	Douglassville Disposal, PA (06/30/89)	Incineration (on site)		Yes		Community concerns prohibited the use of the technology. A feasibility study of solidification/stabilization is being conducted. A ROD amendment is expected in FY99.	Victor J. Janosik 215-566-3217
3	Drake Chemical - Phase II, PA (05/13/86)	Incineration (on site)		Yes		This is a duplicate project. Both the 1986 and the 1988 ROD specified incineration. Incineration (on site) was chosen because of a preference for on-site treatment. The work is documented as a single project.	Gregg Crystall 215-566-3207
3	Hebelka Auto Salvage Yard, PA (09/30/91)	Solidification/ stabilization		Yes		The 1991 ROD refers to solidification/stabilization of lead-contaminated soils completed under the 1989 ROD, but the 1991 ROD specifies monitoring of groundwater only; no solidification/stabilization of additional sites is specified.	Frederick N. Macmillan 215-814-3201
3	M.W. Manufacturing, PA (03/31/89)	Incineration (off site)			Solidification/ stabilization and Thermal Desorption	Results of treatability study showed burning fluff caused potential threat due to emissions of dioxin. Thus, offsite incineration was not implemented. ROD Amendment issued 12/22/97 selected ex-situ stabilization and low temperature thermal desorption.	Bhupendra Khona 215-566-3213

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
3	Publicker Industries, Inc. - OU 3, PA (12/28/95)	Solidification/ stabilization		Yes		The remedy was a contingency. Wastes were disposed of in a landfill.	Frances Costanzi 215-566-3196
3	Greenwood Chemical Co., VA (12/29/89)	Solidification/ stabilization		Yes		Solidification/stabilization of soils contaminated with arsenic would not have been cost-effective for the small volume of waste present. No ROD amendment or ESD was issued.	Philip Rotstein 215-814-3232
3	Rentokil Virginia Wood Preserving, VA (06/22/93)	Incineration (off site)		Yes		Cost too high. A value engineering analysis indicated that contaminants in soil could successfully be contained with a slurry wall and cap. A pump and treat system for dewatering could effectively immobilize contaminants. ROD Amendment issued 08/27/96.	Andrew C. Palestini 215-566-3233
3	Rentokil Virginia Wood Preserving, VA (06/22/93)	Solidification/ stabilization		Yes		Cost too high. A value engineering analysis indicated that contaminants in soil could successfully be contained with a slurry wall and cap. A pump and treat system for dewatering could effectively immobilize contaminants. ROD Amendment issued 08/27/96.	Andrew C. Palestini 215-566-3233
3	Saunders Supply Co., VA (09/30/91)	Solidification/ stabilization		Yes		Solidification/stabilization was a contingency that was found to be unnecessary.	Andrew C. Palestini 215-566-3233
3	Fike Chemical, Inc. - OU 1, WV (09/29/88)	Solidification/ stabilization		Yes		Misinterpretation of the ROD. The ROD called for drainage of water and liquid from the lagoon (referred to as "stabilization" in the ROD). Lagoon sludge then was to be sent off site for incineration.	Katherine Lose 215-566-3240
3	Fike Chemical, Inc.-WV (03/31/92)	Neutralization		Yes		The excavated drums were damaged and were sent off site for disposal. ESD issued 05/13/93.	Katherine Lose 215-566-3240
3	Fike Chemical, Inc. - OU 3 - Drum Removal, WV (03/31/92)	Solidification/ stabilization		Yes		Stabilizing in the ROD referred to stabilizing acidic wastes. The closeout report indicated that all nonhazardous soils were landfilled and hazardous wastes were incinerated. Solidification/ stabilization was a contingency remedy.	Katherine Lose 215-566-3240
4	Ciba Geigy (McIntosh Plant), AL (07/14/92)	Solidification/ stabilization		Yes		Solidification/stabilization was not implemented because it would bring about no cost savings.	Charles L. King, Jr. 404-562-8931

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
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4	Ciba Geigy (McIntosh Plant) - OU 3, AL (07/25/95)	Bioremediation (in situ) - other			Incineration (on site)	The treatability study was unsuccessful; treatment goals could not be met. Wastes are being incinerated instead.	Charles L. King, Jr. 404-562-8931
4	Anodyne, Inc., FL (06/17/93)	Solidification/ stabilization		Yes		The amount of contaminated soil was less than anticipated, and the soil was excavated and landfilled off site.	Brad Jackson 404-562-8925
4	Brown Wood Preserving, FL (04/8/88)	Solidification/ stabilization		Yes		Contingency. This technology in ROD was to be considered only if ex situ biodegradation - land treatment did not attain the desired cleanup levels for the appropriate indicator chemicals within the two-year time period. Goals were met within 18 months.	Rosalind Brown 404-562-8870
4	Cecil Field Naval Air Station - OU 2, Sites 5 and 17, FL (06/24/96)	Bioremediation (in situ) - groundwater			Air sparging	Bioremediation was begun, but the cleanup goals were revised. A ROD amendment is to be issued soon, and air sparging will be used.	Debbie Vaughn-Wright 404-562-8539
4	Cecil Field Naval Air Station - OU 6, Site 11, FL (09/14/94)	Incineration (off site)		Yes		Wastes were below LDR standards for treatment. Waste was sent off site to a RCRA subtitle C landfill.	Debbie Vaughn-Wright 404-562-8539
4	Cecil Field Naval Air Station - OU 7, FL (07/17/96)	Bioremediation (in situ) - groundwater		Yes		SVE and bioremediation were to be implemented in the downgradient area, but concentrations of contaminants have decreased. Therefore, the remedy will not be implemented.	Debbie Vaughn-Wright 404-562-8539
4	Cecil Field Naval Air Station - OU 7, FL (07/17/96)	Soil vapor extraction		Yes		SVE and bioremediation were to be implemented in the downgradient area, but concentrations of contaminants have decreased. Therefore, the remedy will not be implemented.	Debbie Vaughn-Wright 404-562-8539
4	Coleman-Evans Wood Preserving - Amendment, FL (09/26/90)	Solidification/ stabilization			Thermal desorption	The 1990 ROD amendment selected a technology train of bioremediation, soil washing and S/S. Treatability studies indicated presence of dioxin, which cannot be treated with bioremediation. So, remedy changed to thermal desorption. ROD Amendment 9/25/97.	Randall Chaffins 404-562-8929
4	Gold Coast Oil Corp., FL (09/11/87)	Solidification/ stabilization		Yes		The estimated volume of contaminated media had decreased, and the technology was no longer effective.	Brad Jackson 404-562-8925

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4	Homestead Air Reserve - OU 6, Site SS-3, FL (06/27/95)	Thermal desorption		Yes		Excavation, hauling, and landfilling as a non-RCRA solid waste was less costly, as per the ESD issued on 10/22/97. One 55-gal. drum and 1,350 cu yd of waste were hauled to a non-RCRA landfill. Data in design showed reduced volume of soil.	Patricia Goldberg 404-562-8543 Doyle Brittain 404-562-8549
4	Reeves Southeastern Galvanizing - OU 1, FL (10/13/92)	Solidification/ stabilization		Yes		Implementability (equipment problems and site problems). The PRP could not find a treatment mix that could meet performance standards. An ESD was issued on 04/17/97.	Randall Chaffins 404-562-8929
4	Stauffer Chemical Company, FL (12/01/95)	Bioremediation (ex situ)			Bioremediation (ex situ)- composting	The change was made to identify a specific type of ex situ bioremediation.	Brad Jackson 404-562-8925
4	Whitehouse Oil Pits - Amendment, FL (06/16/92)	Bioremediation (ex situ) - slurry-phase		Yes		Treatment goals could not be met. A ROD amendment was to be issued in mid-September 1998, and a public comment period will be conducted.	Mark Fite 404-562-8927
4	Marine Corps Logistics Base - OU 3, PSC 16 & 17, GA (08/14/92)	Solidification/ stabilization		Yes		Misinterpretation of ROD; soil was mixed with clean fill and then disposed of at a permitted landfill. No solidification/stabilization was performed.	Robert Pope 404-562-8506
4	Marzone Inc./Chevron Co. - OU 1, GA (09/30/94)	Thermal desorption		Yes Yes		Remedy was too costly, the community was opposed to the remedy, and dioxin was discovered. Therefore, the technology was not implemented, and the soil was excavated and disposed of at an off-site landfill. A ROD amendment was issued on 06/18/97.	Annie Godfrey 404-562-8919
4	Mathis Brothers Landfill - South Marble Top Road, GA (03/24/93)	Bioremediation (ex situ) - slurry-phase				Excavation, landfilling, and incineration were less costly and required less time. Soils were excavated and transported off site for landfilling if nonhazardous, and incinerated if hazardous.	Charles L. King, Jr. 404-562-8931
4	Smith's Farm - OU 1, KY (09/29/89)	Solidification/ stabilization		Yes		Solidification/stabilization was planned for the heavy metals remaining in the treated soils after the thermal desorption, but the treatment was not necessary.	Antonio DeAngelo 404-562-8826
4	Aberdeen Pesticide Dumps (Amendment), NC (09/30/91)	Solidification/ stabilization			Incineration (off site)	Arsenic is a contaminant at the site. Because the arsenic was commingled with pesticide wastes, all soil contaminated with arsenic was incinerated, and no soil required stabilization.	Kay Crane 404-562-8795

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4	Cape Fear Wood Preserving, NC (06/30/89)	Soil washing			Thermal desorption	An ESD issued in 1993 changed the remedy from soil washing to thermal desorption.	Jon Bornholm 404-562-8820
4	Chemtronics, Inc., NC (040/5/88)	Solidification/ stabilization		Yes		The project was canceled during the design phase, and the site was capped.	Jon Bornholm 404-562-8820
4	Marine Corps Base, Camp Lejeune - OU 12, Site 3 - The Old Creosote Plant, NC (04/03/97)	Bioremediation (ex situ) - solid-phase		Yes		Treatment goals could not be met during treatability testing, and therefore bioremediation (ex situ) – solid-phase will not be implemented. A ROD amendment that specifies disposal of the contaminated soils in an off-site landfill is being prepared.	Gena Townsend 404-562-8538
4	Sodyeco - Area C, NC (09/24/87)	Soil vapor extraction		Yes		During installation, contaminated drums were encountered, excavated, and removed. Contamination therefore decreased, and SVE no longer was required.	Michael Townsend 404-562-8813
4	Geiger (C&M Oil), SC (6/1/87)	Solidification/ stabilization		Yes		A ROD amendment was issued on 07/13/93.	Sheri Panabaker 404-562-8810
4	Kalama Specialty Chemicals, SC (09/28/93)	Solidification/ stabilization		Yes		The amount of contaminated material was less than originally estimated, so it was excavated and disposed of off site. Contingency in ROD.	Steven Sandler 404-562-8818
4	Kalama Specialty Chemicals, SC (09/28/93)	Mechanical soil aeration		Yes		The amount of contaminated material was less than originally estimated, so it was excavated and disposed of off site. Contingency in ROD.	Steven Sandler 404-562-8818
4	Savannah River (TNX Area), SC	In situ air stripping (air sparging)		Yes		Problems with implementability (equipment problems, on site problems) arose; development of an air recirculation well was not possible. Areas of low permeability precluded formation of the required recirculation cell. An ESD is to be issued in near the future.	Joao Cardoso-Neto (Bechtel) 803-952-6495 Keith A. Collinsworth (SCDHEC) 803-896-4055 Constance A. Jones 404-562-8551

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Ninth Edition (April 1999) (continued)

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4	Savannah River (USDOE) - M Area Settling Basin, SC	In situ air stripping (air sparging)		Yes		This is a demonstration project, not a full-scale application.	Mike Simmons (DOE) 803-725-1627 Brian Looney (WSRC) 803-725-1627
4	Savannah River (USDOE) - OU 1, SC (06/29/92)	Solidification/ stabilization		Yes		The work was completed as a RCRA project that is not applicable to the ASR.	Mike Simmons (DOE) 803-725-1627 Brian Looney (WSRC) 803-725-3692
4	Amnicola Dump, TN (03/30/89)	Solidification/ stabilization		Yes		The volume of soil was much less than had been indicated in the ROD, and it was more cost-effective to dispose of the soil off site.	Robert West 404-562-8806
4	Arlington Blending and Packaging Co., TN (06/28/91)	Solidification/ stabilization		Yes		The estimated volume of contaminated media has decreased; the technology no longer is effective. An ESD is to be issued in near future.	Derek Matory 404-562-8800
4	Wrigley Charcoal, TN (09/30/91)	Incineration (off site)		Yes		The technology was too expensive; disposed of off site in a landfill. A ROD amendment was issued on 02/02/95.	Lisa Montalvo 404-562-8805
4	Wrigley Charcoal, TN (09/30/91)	Solidification/ stabilization		Yes		The technology was too expensive; disposed of off site in a landfill. A ROD amendment was issued on 02/02/95.	Lisa Montalvo 404-562-8805
5	Acme Solvent Reclaiming, Inc., IL (12/31/90)	Incineration (off site)		Yes		The ROD identifies off-site incineration as a contingency. The technology was never implemented.	David Linnear 312-886-1841
5	Belvidere Municipal Landfill - No. 1, IL (06/29/88)	Incineration (off site)		Yes		Incineration off site was included in the ROD to be used if the concentration of PCBs was greater than 50 ppm. Because the concentration was not, PCBs were disposed of off site.	William Ballard 312-353-6083
5	Byron/Johnson Salvage Yard, IL (03/13/85)	Incineration (off site)		Yes		Excavation, hauling, and landfilling were used instead of off-site incineration as indicated in the ROD because of high cost.	Bill Bolen 312-353-6316
5	Savanna Army Depot Activity, IL	Solidification/ stabilization		Yes		This project is a RCRA closure - state oversight.	David Seely 312-886-7058

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5	Fisher-Calo, IN (08/07/90)	Soil vapor extraction			Bioremediation (in situ) - biosparging	Biosparging was determined to be more effective than SVE; no ROD amendment or ESD has been issued.	Jeffrey Gore 312-886-6552
5	Main Street Well Field, IN (03/29/91)	Incineration (off site)		Yes		Off-site incineration was never implemented at this site.	Deborah Orr 312-886-7576
5	Wayne Waste Oil, IN (03/30/90)	Bioremediation (in situ)			Bioremediation (in situ) - biosparging	The technology has been reclassified.	Jeffrey Gore 312-886-6552
5	Wayne Waste Oil, IN (03/30/90)	Solidification/ stabilization		Yes		The technology was determined to be unnecessary. Metals were the only contaminants of concern, and the site had been capped already. Consequently, the risk was minimized. No ROD amendment or ESD was written.	Jeffrey Gore 312-886-6552
5	Wedzeb, IN (06/30/89)	Incineration (off site)		Yes		52,000 drums of PCB capacitors were incinerated off site in 1987 at the Apptus facility in Kansas. Soil was excavated and disposed of off site because the contamination remaining in soil was low. No ROD amendment or ESD was issued.	Kenneth Theisen 312-886-1959
5	Berlin & Farro Liquid Incineration, MI (02/29/84)	Incineration (off site)		Yes		Contingency in the ROD. ROD specified transportation of PCB liquid wastes, if any, to an approved off-site incinerator.	Robert Whippo 312-886-4759
5	Burrows Sanitation, MI (09/30/86)	Solidification/ stabilization		Yes		The volume of contamination was smaller than originally had been estimated. It was more cost-effective to excavate and dispose of off site under removal authority.	Jeffrey Gore 312-886-6552
5	Carter Industrials, Inc., MI (09/18/91)	Incineration (off site)		Yes		1991 ROD specified thermal desorption, not incineration off-site. Misinterpretation of ROD. Amended ROD 2/28/95 canceled remedy because the cost for off-site disposal dropped, there was less soil, and restrictions on interstate transport have decreased.	Jon Peterson 312-353-1264
5	Clare Water Supply, MI (09/16/92)	Thermal desorption		Yes		The remedy should have been listed as SVE. The 1992 ROD specified SVE, not thermal desorption, but SVE was not feasible because of the low permeability of soils. A ROD amendment was issued on 05/15/97.	Jon Peterson 312-353-1264

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5	Duell-Gardner Landfill, MI (09/07/93)	Thermal desorption		Yes		The volume of contaminated material was much smaller than originally had been estimated. Consequently, it was more cost-effective to excavate and dispose of the material off site. A ROD amendment was to be issued in FY98.	Lolita Hill 312-353-1621
5	Electrovoice, MI (06/23/92)	Solidification/ stabilization		Yes		Solidification/stabilization was identified as a contingency remedy in the 1992 ROD. If cleanup goals are not achieved by the SVE system, the soils will be excavated and stabilized. The SVE system is in operation and its performance will be reviewed next year.	Karen Sikora 312-886-1843
5	Forest Waste Products, MI (03/31/88)	Incineration (off site)		Yes		An ESD is to be issued in the near future.	Elizabeth Reiner 312-353-6576
5	H. Brown Company, Inc., MI (09/30/92)	Solidification/ stabilization		Yes		The site was capped with clay and covered with asphalt so that the property could be redeveloped. Two ROD amendments have been issued. The first, issued on 09/29/95, removed solidification/stabilization from the project.	Timothy Prendiville 312-886-5122
5	Thermo-Chem, Inc. - OU 1, MI (09/30/91)	Incineration (off site)		Yes		The concentrations of the contaminants in the soil were low and it was not cost-effective to treat the soil with incineration. The metals could not be treated with incineration. The contaminated soil was excavated and disposed of off site.	James Hahnenberg 312-353-4213
5	MacGillis and Gibbs/Bell Lumber and Pole - OU 3, MN (09/22/94)	Bioremediation (in situ) - groundwater		Yes		The technology is ex situ, not in situ. Groundwater is being pumped and treated above ground.	Darryl Owens 312-886-7089 Miriam Horneff (MPCA) 612-296-7228
5	Ritari Post and Pole - OU 1, MN (06/30/94)	Incineration (off site)			Bioremediation (ex situ) - land treatment	Incineration was too expensive.	Ted Smith 312-353-6571 John Moeger (MPCA) 612-296-9707
5	Ritari Post and Pole - OU 1, MN (06/30/94)	Incineration (off site)		Yes		Incineration was too expensive. Chemical oxidation may be used to treat highly contaminated soils, and land treatment will be used for lower concentrations; the use of off site incineration would move the risk outside the site. An ESD is to be issued.	Ramon Torres 312-886-3010

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5	Allied Chem & Ironton Coke, OH (12/28/90)	Incineration (on site)		Yes		Contaminated soil volume decreased. A ROD amendment was to be issued in May or June 1998. Soil contaminated with soft tar will be excavated, soil that meets the TCLP limit will be recycled for alternative fuel, and soil that fails the TCLP limit will be disposed of at an off-site landfill.	Matthew Mankowski 312-886-1842
5	Fields Brook, OH (09/30/86)	None				The original remedy in the 1986 ROD was not listed in the ASR. The 1986 ROD specified solidification of sediments. EPA issued and ESD on 08/15/97 changed solidification to disposal.	Terese Van Donsal 312-353-6564
5	Summit National Liquid Disposal Service - Amendment, OH (11/02/90)	Incineration (off site)		Yes		The 1988 ROD and the 1990 ROD amendment both specified incineration on site. It is documented as a project under the 1988 ROD.	Anthony Rutter 312-886-8961
5	Mid-State Disposal Landfill, WI (09/30/88)	Solidification/ stabilization		Yes		Solidification/stabilization was identified as a contingency that was to be used only to solidify the sludge lagoon so that a cap could be placed over it. Solidification/ stabilization was deemed unnecessary. A geomembrane cap was used without solidification/ stabilization.	Mary Tierney 312-886-4785
5	Onalaska Municipal Landfill, WI (08/14/90)	Bioremediation (in situ)			Bioremediation (in situ) - bioventing	The technology was reclassified from bioremediation in situ to bioventing.	George Mickelson (WIDNR) 608-267-0858 Kevin Adler 312-886-7078
5	Spickler Landfill, WI (06/03/92)	Solidification/ stabilization		Yes		Results of a test of stabilization/solidification showed that the technology would not provide a significant reduction in the mobility or hydraulic conductivity of mercury wastes. An impermeable cap with synthetic liner was used to eliminate infiltration.	John Fagiolo 312-886-0800
6	Gurley Pit, AR (10/06/86)	Incineration (off site)		Yes		The cost was too high; transportation and safety problems also arose.	Ernest R. Franke 214-665-8521
6	Popile, AR (02/01/93)	Bioremediation (ex situ)			Bioremediation (ex situ) - land treatment	The RI data is being reviewed to determine whether there is a more appropriate remedy. The site was capped under a removal action. FS decisions will be made in 1999.	Shawn Ghose 214-665-6782

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6	Popile, AR (02/01/93)	Bioremediation (in situ)			Bioremediation (in situ) - groundwater	The RI data is being reviewed to determine whether there is a more appropriate remedy. The site was capped under a removal action. FS decisions will be made in 1999. The original remedy had been composting, but the remedy was changed to bioremediation in situ - groundwater.	Shawn Ghose 214-665-6782
6	Vertac, Inc., AR (06/30/93)	Incineration (off site)		Yes		This project has been consolidated with off-site incineration under the 1993 ROD for OU1. All material specified in that ROD was incinerated off site according to a 1995 ESD. See information under the listing for incineration off site at OU1.	Phillip Allen 214-665-8516
6	Vertac, Inc. - Onsite OU 1, AR (05/25/95)	Incineration (on site)			Incineration (off site)	An on-site incinerator was present after use for a previous removal action. The PRP and the incinerator operator could not agree on a price, so EPA allowed the PRP to choose to incinerate the soils off site. An ESD was issued on 05/25/95.	Mike Arjmandi (ADPCE) 501-682-0852 Phillip Allen 214-665-8516
6	Bayou Bonfouca - Source Control OU (Amendment), LA (07/20/95)	Incineration (off site)		Yes		This ROD amendment (07/20/95) actually covered the off-site incineration of waste from the Southern Shipbuilding Corporation site. Therefore, no waste from Bayou Bonfouca was incinerated off site or addressed by this ROD amendment.	Mark Hansen 214-665-7548
6	Pab Oil & Chemical Services, Inc., LA (09/22/93)	Bioremediation (ex situ) - other			Solidification/ Stabilization	Bioremediation was discontinued because of implementability problems. An ESD was issued on 03/12/1997.	Caroline Ziegler 214-665-2178
6	Atchison, Topeka, & Santa Fe Clovis/Santa Fe Lake - TPH lake sediments, NM (09/23/88)	Bioremediation (ex situ) - land treatment		Yes		No information available.	Donald H. Williams 214-665-2197
6	Oklahoma Refining Co., OK (06/09/92)	Bioremediation (ex situ) - other			Bioremediation (ex situ) - land treatment	The type of bioremediation was clarified; there was no actual remedy change.	Kelly Dixon (ODEQ) 405-702-5141 Earl Hendrick 214-665-8519

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6	Bailey Waste Disposal, TX (06/28/88)	Solidification/ stabilization		Yes		Cost too high; treatment goals could not be met; more contamination than planned. New remedy includes excavation and offsite disposal of problematic wastes and installation of a geocomposite cap over mixed industrial and municipal wastes. ROD Amendment 12/16/96.	Chris Villarreal 214-665-6758
6	Brio Refining, TX (03/31/88)	Solidification/ stabilization		Yes		Solidification/ stabilization was considered during the RI/FS stages, but was not included in the ROD because it could not meet treatment levels. No ROD Amendment or ESD therefore was necessary.	John Meyer 214-665-6742
6	Kelly Air Force Base - Site 1100, Phase II, TX	This phase is an addition to the phase listed in the eighth edition.	Soil vapor extraction			No information available.	Bill Hall 210-925-3100
6	Kelly Air Force Base - Site 1100, Phase III, TX	This phase is an addition to the phase listed in the eighth edition.	Bioremediation (in situ)- bioventing			No information available.	Bill Hall 210-925-3100
6	Petro-Chemical Systems, Inc.- OU 2, TX (04/30/98)	This is an FY98 ROD that was not listed in the eighth edition.	Thermal desorption				Chris Villarreal 214-665-6758
6	Petrochemical (Turtle-Bayou), TX (09/06/91)	Incineration (off site)			Soil vapor extraction	Misinterpretation of ROD. SVE currently is being used to remediate four soil areas at the site.	Chris Villarreal 214-665-6758
6	Sheridan Disoposal Services, TX (12/29/88)	Solidification/ stabilization		Yes		Misinterpretation of the ROD.	Gary A. Baumgarten 214-665-6749
6	South Cavalcade Street, TX (09/26/88)	Incineration (off site)		Yes		The 09/26/88 ROD listed incineration (off site) for sludges, if encountered. However, no sludges were not found and therefore incineration was not performed.	Glenn Celerier 214-665-8523
6	South Cavalcade Street, TX (09/26/88)	Soil washing		Yes		A pilot study of soil washing showed that 40 percent of the volume could not be washed to meet goals. Soils contaminated with carcinogenic PAHs at levels higher than 700 ppm will be sealed and contained beneath a six-inch-thick reinforced concrete cap. A ROD amendment was issued on 06/27/97.	Glenn Celerier 214-665-8523

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6	South Cavalcade Street, TX (09/26/88)	Flushing (in situ)		Yes		Estimated volume of contaminated soil much less than anticipated, but treatment goals could not be reached anyway. Will cap the site instead. ROD Amendment issued 6/27/97.	Glenn Celerier 214-665-8523
7	Midwest Manufacturing/North Farm (Amendment), IA (09/30/93)	Solidification/ stabilization		Yes		The cost was too high; contaminant levels for both OUs were lower than before. Site risks were evaluated to determine that monitoring with institutional controls would effectively address the contamination at both OUs. The original ROD was issued in 1988.	Diane Easley 913-551-7797
7	Strother Field Industrial Park, KS (03/31/94)	Soil vapor extraction		Yes		The application of SVE technology is impractical at this site because the soil permeability is too low. The remedy proposed in the ESD is a pump-and-treat system with monitored natural attenuation. An ESD was to be issued by 09/30/98.	Paul Roemerman 913-551-7694
7	Ellisville Site - Bliss, MO (09/29/86)	Incineration (off site)				The 1986 ROD called for interim storage of contaminated soil on site and incineration at an off-site commercial facility. The 1991 ROD called for off-site incineration at the Times Beach, MO site operated by the PRPs. A ROD amendment was issued on 09/30/91.	Robert Feilds 913-551-7697
7	Missouri Electric Works, MO (09/28/90)	Incineration (on site)			Thermal desorption	On-site incineration was too expensive. A ROD amendment was issued in September 1995.	Pauletta France-Isetts 913-551-7701
7	Shenandoah Stables, MO (09/28/90)	Solidification/ stabilization		Yes		Misinterpretation of the ROD.	Robert Feild 913-551-7697
8	Broderick Wood Products, CO (03/24/92)	Bioremediation (in situ) - groundwater			Bioremediation (in situ) - bioventing	The remedy was changed to bioventing in the ESD issued on 03/24/95. The pump-and-treat system did not work with LNAPLs; therefore, the cost of implementing it would be high.	Armando Saenz 303-312-6559
8	Fort Carson - Building 9648 OU, CO	Bioremediation (in situ) - other			Bioremedi-ation (in situ) - bioventing	The technology was reclassified.	John Cloonan 719-526-8004
8	Lockheed/Martin - W C Astronautics Facility, CO (09/24/90)	Soil vapor extraction			Thermal desorption	SVE will not be used. All soil will be excavated and treated by thermal desorption. Doing so will allow the site owner to reduce risk, eliminate the need for post-closure care, and clean-close the unit.	George Dancik 303-312-6206 Charles Johnson (CDPHE) 303-692-3348

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
8	Rocky Mountain Arsenal - OU 17, CO (05/14/90)	Solidification/ stabilization		Yes		The ROD was misinterpreted.	Laura Williams 303-312-6660
8	Rocky Mountain Arsenal - OU 28, CO (01/15/93)	Solidification/ stabilization		Yes		OU 28 was the evaluation of alternatives for treatment of various future waste streams at RMA. Solidification/ stabilization was considered, but no actions were taken under OU 28.	Laura Williams 303-312-6660
8	Rocky Mountain Arsenal - OU 29, CO (01/15/93)	Incineration (off site)		Yes		OU 29 was an interim remedial action to address PCB wastes. Both off-site incineration and off-site landfilling were selected as the most preferable alternatives for disposal of PCB wastes. The PCB wastes were ultimately disposed of by landfilling.	Laura Williams 303-312-6660
8	Sand Creek Industrial, CO (09/28/90)	Incineration (off site)		Yes		No information is available.	Erna Waterman 303-312-6762
8	Summitville Mine - OU 0, CO (12/15/94)	Neutralization		Yes		The ROD was misinterpreted.	Victor Ketallappet 303-312-6528
8	Burlington Northern (Somers Plant) - Soil, Base - OU 4, UT (06/14/94)	Bioremediation (in situ) - other		Yes		The ROD was misinterpreted.	James C. Harris 406-441-1150
8	Montana Pole and Treating Plant - Soil OU, MT (09/21/93)	Bioremediation (in situ) - other		Yes		The ROD was misinterpreted.	James C. Harris 406-441-1150 Neil Marsh (MT) 406-444-1420
8	Silver Bow Creek/Butte Area - Rocker Timber Framing and Treatment Plant OU, MT (06/30/92)	Solidification/ stabilization		Yes		Solidification/stabilization treatment was recommended only if chemical treatment was not successful. The estimated volume of contaminated media had decreased; the technology was no longer effective.	Mike Bishop 406-441-1150
8	Ellsworth AFB - Abandoned Fire Protection Area, SD (05/10/96)	Soil vapor extraction		Yes		The FY96 ROD only expanded the dual phase system from the FY95 ROD, but did not add any technologies.	Peter Ismert 303-312-6665

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
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8	Hill Air Force Base - OU 4, UT (06/14/94)	Soil vapor extraction		Yes		The bottom half of the landfill is below the water table, and the landfill does not have a slurry wall to divert groundwater flow from it. Therefore, SVE technology could not be implemented. A series of 3 trenches collects leachate from the landfill.	Dr. Dan Atkins (DoD) 801-775-2559 Rob Stites 303-312-6664
8	Utah Power & Light/American Barrel, UT (07/07/93)	Incineration (off site)		Yes		Off-site incineration was specified as a contingent remedy but never was implemented.	Paula Schmittdiel 303-312-6861
9	Fairchild Semiconductor (Mt. View) - Bldg 1-4 (515 & 545 N. Whisman Rd./313 Fairchild Dr.), CA (06/30/89)	Soil vapor extraction		Yes		The water table rose and is now too high for SVE to be effective. A pump-and- treat system currently is being used. No ROD amendment or ESD was issued.	Dennis Curran Smith Env. Tech. Corp. 415-960-1640 Eugenia Chow 415-744-2258
9	FMC Corp. (Fresno Plant), CA (06/28/91)	Solidification/ stabilization		Yes		Removed from proposed NPL listing.	Cynthia Wetmore 415-744-2234
9	Intel, Mountian View, CA (06/09/89)	Mechanical soil aeration		Yes		Soil was excavated and shipped off site.	Eugenia Chow 418-744-2258
9	J.H. Baxter, CA (09/27/90)	Bioremediation (ex situ) - land treatment			Bioremediation (in situ) - bioventing	Ex situ bioremediation was replaced with in situ bioremedia-tion. Landfarming may be used; biomass culture was added to contaminated soil. ESD issued 3/27/98.	Kathy Setian 415-744-2254 Beatriz Bofill 415-744-2235
9	Koppers (Oroville Plant), CA (09/13/89)	Solidification/ stabilization		Yes		Treatment goals could not be met. The concentrations of dioxins were sufficiently high that solidification/ stabilization was not feasible. A ROD amendment was issued on 08/29/96.	Charles Berrey 415-744-2223
9	March AFB - OU 1, Area 5 & Site 4, CA (06/20/96)	Bioremediation (in situ) - bioventing		Yes		No information available.	Richard Russell 415-744-2406
9	March AFB - OU 1, Area 5 & Site 4, CA (06/20/96)	Thermal desorption				No information available.	Richard Russell 415-744-2406

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
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9	Mather AFB - Soil and Groundwater OU/Smaller UST Sites, CA	Bioremediation (in situ)			Bioremediation (in situ) - bioventing	The technology was reclassified from bioremediation in situ to bioventing.	Kathleen Salyer 415-744-2214 Terry Winsor (Montgomery Watson) 916-231-4430
9	McColl, CA (06/30/93)	Solidification/ stabilization		Yes		Technology had implementation problems. EPA selected the contingency remedy of RCRA-equivalent closure for the sump wastes. Pilot and full-scale treatability studies were conducted during 1994 and 1995 to determine the feasibility of solidification/stabilization.	Patti Collins 415-744-2229
9	Purity Oil Sales, Inc., CA (09/26/89)	Solidification/ stabilization		Yes		The reason for deletion of the technology is unknown. An ESD was issued in 1995, and capping was performed at the site.	Rosemarie Caraway 415-744-2231
9	Raytheon, Mountain View, CA (06/09/89)	Mechanical soil aeration		Yes		Soil was excavated and shipped off site for disposal.	Eugenia Chow 415-244-2258
9	Roseville Drums, CA (03/03/88)	Bioremediation (in situ)		Yes	Bioremediation (in situ) - bioventing	The technology was reclassified from bioremediation in situ to bioventing.	Bradley Shipley 415-744-2287
9	Sacramento Army Depot, CA (01/17/95)	Solidification/ stabilization		Yes		The 1995 ROD was a base-wide ROD. It reiterated the S/S remedy specified in the 3/29/93 ROD. It did not add another S/S project. Hence there is only one S/S project at SAD.	Marlon Mezquita 415-744-1499
9	Southern California Edison, Visalia Pole Yard, CA (06/10/94)	Bioremediation (in situ) - groundwater			Thermally enhanced recovery	The remedy was implemented as a contingency. The remedy is actually "dynamic underground stripping." Treatment goals could not be met because concentrations were too high for bioremediation to work in a timely manner.	Richard Procunier 415-744-2219 Emmanuel Mensall (CADTSC) 916-255-3704
9	Southern California Edison, Visalia Pole Yard - Groundwater OU, CA (06/10/94)	Bioremediation (in situ) - groundwater		Yes		The remedy implemented was a contingency. Concentrations were too high. Bioremediation could not achieve cleanup levels in a realistic time frame.	Richard Procunier 415-744-2219 Emmanuel Mensall (CADTSC) 916-255-3704

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
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9	Valley Wood Preserving, Inc., CA (09/27/91)	Solidification/ stabilization		Yes		The estimated volume of contaminated media had decreased; the technology was no longer effective. A ROD amendment is to be issued in near future.	Michelle Lau 415-744-2227
10	FAA Northway Station, AK	Bioremediation (in situ)			Bioremediation (in situ) - groundwater	The technology was reclassified.	Daniel McKay 603-646-4738
10	FAA Strawberry Point Station, AK	Bioremediation (in situ)			Bioremediation (in situ) - biosparging	The technology was reclassified.	Daniel McKay 603-646-4738
10	Fort Wainwright - OU 1 - Chemical Agent Dump Site, AK (07/20/95)	Neutralization		Yes		Non-invasive geophysical investigations indicated the presence of buried chemical agents. However, when excavation was completed, the agents were undetectable.	David Williams (USACE) 907-753-5657 Dianne Soderlund 907-271-3425
10	U.S. DOE Idaho National Engineering and Environmental Lab - OU 23, ID	Solidification/ stabilization			Vitrification	Solidification/stabilization was never used at the site.	Terrell Smith Lockheed Marietta GW Restoration Dept. 208-526-5692 Wayne Pierre 206-553-7261
10	McCormick and Baxter Creosoting Company (Portland Plant), OR (03/29/96)	Solidification/ stabilization		Yes		Treatment goals could not be met. Decided to dispose offsite. The excavated soil contaminated with F-listed waste will be disposed offsite at a landfill. ROD Amendment to be issued in 1998.	Alan Goodman 503-326-3685
10	Union Pacific Railroad Tire Treatment, OR (03/27/96)	Bioremediation (in situ)			Bioremediation (in situ) - bioventing	Reclassified technology.	Brian McClure (ORDEQ) 541-298-7255 Alan Goodman 503-326-3685
10	American Crossarm & Conduit, WA (06/30/93)	Solidification/ stabilization		Yes		Excavated and transported contaminated soil to a landfill in Arlington, OR. Flyash was added to absorb moisture. ROD called for the material to be solidified off site.	Lee Marshall 206-553-2723

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Ninth Edition (April 1999) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 8TH EDITION)	9TH EDITION			COMMENTS	CONTACTS/PHONE
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10	Commencement Bay, South Tacoma Field, WA (09/29/94)	Soil vapor extraction		Yes		The plume was smaller than had been estimated; contamination levels have decreased. SVE was discussed as an option but never implemented.	Cami Grandinetti 206-553-8696
10	Commencement Bay, South Tacoma Field, WA (09/29/94)	In situ air stripping (air sparging)		Yes		The plume smaller than had been estimated; contamination levels have decreased. Air sparging was never implemented, and no ROD amendment or ESD was issued.	Cami Grandinetti 206-553-8696
10	Harbor Island (Lead), WA (09/30/93)	Incineration (off site)		Yes		Contaminated soil was disposed of at a hazardous waste disposal facility. The technology was a contingency in the ROD.	Keith A. Rose 206-553-7721
10	Queen City Farms, WA (10/24/85)	None	Solidification/ Stabilization			This remedy was not listed in the ASR.	Neil Thompson 206-553-7177
10	Western Processing Co., Inc., WA	Thermal desorption		Yes		Contaminated soil was excavated and transported off site to a landfill in Arlington, OR. The remedy was contingent and never implemented.	Lee Marshall 206-553-2723
10	Western Processing Co., Inc. - ESD, WA (12/11/95)	Bioremediation (in situ) - other		Yes		Natural attenuation already was occurring at site. Bioremediation would not enhance the degradation of contaminants. An ESD will be issued to note the change.	Lee Marshall 206-553-2723
10	Western Processing Co., Inc. - Phase I, WA (08/05/84)	Incineration (off site)		Yes		Contaminated soil was excavated and disposed of off site. Incineration was not required. The specified remedy in the ROD was off-site disposal or incineration, so no amendment or ESD was required.	Lee Marshall 206-553-2723
10	Western Processing Co., Inc. - Phase II, WA (09/25/85)	Solidification/ stabilization		Yes		The technology never was specified in the ROD as the preferred remedy and therefore never was used at the site. Flyash was added to the soil to absorb moisture for easy transportation. The soil was excavated and disposed of off site.	Lee Marshall 206-553-2723

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Eighth Edition (November 1996): Additions, Changes, and Deletions from the Seventh Edition (September 1995)

The eighth edition of this report added information about 38 innovative treatment technologies selected for remedial action under FY 1995 RODs and two treatment technologies at non-Superfund DoD and DOE sites, and two innovative treatment technologies selected for two RCRA corrective actions. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	New Bedford, MA (04/06/90)	Incineration (on site)		Yes		Remedy canceled because of community concerns. No alternative selected at this time.	David Dickerson 617-573-9632
1	Norwood PCBs, MA (09/29/89)	Solvent extraction		Yes		Remedy not implemented because of space constraints on-site, cost, and safety issues. New cleanup goals based on future land use and changes in risk assessment methodologies. Site will be capped instead. ROD Amendment issued on 5/17/96.	Bob Cianciarulo 617-573-5778
1	Wells G&H, MA (09/14/89)	Incineration (on site)			Incineration (off site)	Remedy changed to off-site incineration because of community concerns. Explanation of significant difference (ESD) signed 04/25/91.	Mary Garren 617-573-9613 Paula Fitzsimmons (MA) 617-223-5572
1	Wells G&H, OU1, MA (09/14/89)	Soil vapor extraction	Soil vapor extraction and in situ air sparging	Yes		Adding air sparging to existing SVE project to enhance pump-and-treat. Conducting SVE on a new area (New England Plastics). ESD to be issued.	Mary Garren 617-573-9613
1	Davis Liquid Waste, RI (09/29/87)	Incineration (on site)			Thermal desorption	Thermal desorption cheaper and more effective based on performance data. ESD signed on 7/19/96.	Neil Handler 617-543-9636
2	Brook Industrial Park, OU 1, NJ (09/30/94)	Incineration (on site)		Yes		Misinterpretation of ROD. Will conduct off-site incineration or disposal.	Donna Vizian 212-637-4295
2	De Rewal Chemical, NJ (09/29/89)	Incineration (on site)		Yes		Remedy changed to off-site disposal because more cost-effective. Much less volume of contaminated material than originally projected.	Romona Pezzella 212-637-4385
2	Lipari Landfill, NJ (07/11/88)	Incineration (on site)			Thermal desorption*	ROD specified thermal treatment of marsh sediments. Thermal desorption was selected as the treatment.	Fred Cataneo 212-637-4428
2	Applied Environmental Services, OU 1, NY (06/24/91)	Bioventing		Yes		Misinterpretation of ROD.	Maria Jon 212-637-3967 Gerald Ridder (NY) 518-457-0927

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Eighth Edition (November 1996)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
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2	Circuitron Corporation, OU 1, NY (03/29/91)	Soil vapor extraction		Yes		Further investigation indicated that VOCs were below action levels.	Miko Fayon 212-637-4250 Thomas Simmons (USACE) 816-426-2296
2	Love Canal, NY (10/1/87)	Incineration (on site)			Incineration (off site)	PRP was conducting on-site incineration at another site. Waste was transported to that site for incineration. ESD issued 11/96.	Damian Duda 212-637-4269 Doug Carbarini 212-637-4263
2	Sarney Farm, NY (09/27/90)	Incineration (on site)			Thermal desorption*	Misinterpretation of the ROD.	Kevin Willis 212-637-4271
3	Delaware Sand & Gravel, DE (04/22/88)	Incineration (on site)			Soil vapor extraction* and bioremediation (in situ)*	Remedy was revised to address previously unrecognized site conditions. ROD amendment signed on 09/30/93. SVE subsequently changed to bioventing.	Eric Newman 215-566-3237
3	Southern Maryland Wood Treating, MD (06/29/88)	Incineration (on site)			Thermal desorption	Remedy changed to thermal desorption, because of cost and community concerns. ROD issued on 09/08/95.	Stephanie Dehnhard 215-566-3234
3	Eastern Diversified Metals, PA (03/29/91)	Incineration (on site)			Incineration (off site)	ROD specified on or off-site incineration. Off-site being conducted because of reduced amount of material to be treated.	Steven Donohue 215-566-3215
3	MW Manufacturing, PA (06/29/90)	Incineration (on site)		Yes		Pilot-scale trial burn could not achieve emission standards. Remedy to be determined; considering solidification/ stabilization at this time.	Bhupi Khona 215-566-3213
3	Sagertown Industrial, PA (01/29/93)	Incineration (on site)			Incineration (off site)	Remedy changed because of cost and faster treatment time. ESD signed on 03/09/95.	Steven Donohue 215-566-3215
3	Whitmoyer Laboratories, OU 2, PA (12/17/90)	Incineration (on site)			Incineration (off site)	Remedy changed because the volume of wastes was less than originally projected. ESD signed on 12/28/94.	Chris Corbet 215-566-3220

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Eighth Edition (November 1996)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
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3	Rentokil, VA (06/22/93)	Thermal desorption		Yes		Groundwater modeling indicated that there would be no further groundwater contamination if source soils were left in place. Site will be capped. ROD amendment issued on 8/27/96.	Andrew Palestini 215-597-1286
3	Saunders Supply Co., 0U 1, VA (09/30/91)	Dechlorination and Thermal desorption			Incineration (off site)	Remedy changed to off-site incineration due to implementability, short-term effectiveness, and cost. ROD Amendment issued on 9/27/96.	Andrew Palestini 215-597-1286
3	Ordnance Works Disposal, WV (03/31/88)	Incineration (on site)		Yes	Bioremediation (ex situ)*	Remedy changed because of community concerns. ROD amended in 1/89.	Melissa Whittington 215-566-3235
4	Ciba-Geigy (McIntosh Plant), OU 2, AL (09/30/91)	Thermal desorption			Incineration (on site)*	Treatability study showed that incineration was more cost-effective.	Charles L. King, Jr. 404-562-8931
4	Ciba-Geigy (McIntosh Plant), OU 2, AL (09/30/91)	Flushing (in situ)		Yes		Treatability study showed percolation from precipitation was just as effective. Minimal benefit would be gained from flushing (in situ).	Charles L. King, Jr. 404-562-8931
4	Ciba-Geigy (McIntosh Plant), OU 4, AL (07/14/92)	Thermal desorption			Incineration (on site)	Treatability study showed that incineration was more cost-effective.	Charles L. King, Jr. 404-562-8931
4	Ciba-Geigy (McIntosh Plant), OU 4, AL (07/14/92)	Flushing (in situ)		Yes		Treatability study showed percolation from precipitation was just as effective. Minimal benefit would be gained from flushing (in situ).	Charles L. King, Jr. 404-562-8931
4	Mowbray Engineering, AL (09/25/86)	Incineration (on site)		Yes	Solidification/ stabilization	Remedy changed because of cost.	Tim Woolheater 404-347-2643
4	American Creosote Works, Inc., OU 2, FL (02/03/94)	Surfactant flushing - groundwater		Yes		Determined that pump-and-treat alone would be effective.	Mark Fite 404-562-8927
4	Zellwood Groundwater, FL (12/17/87)	Incineration (on site)			Solidification/ stabilization*	Remedy changed because of community concerns and because the state would not concur with incineration. ROD amendment issued on 03/01/90.	Pam Scully 404-347-6246

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Eighth Edition (November 1996)(continued)

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4	Mathis Brothers Landfill (South Marble Top Road), GA (03/24/93)	Incineration (on site)			Incineration (off-site) and bioremediation (ex-situ)*	Remedy changed because of community concerns, cost-effectiveness, and decreased waste volume from original ROD. Bioremediation will treat dicamba wastes. Incineration (off site) will treat all other wastes.	Charles L. King.Jr. 404-562-8931
4	Smith's Farm Brooks, KY (09/29/89)	Incineration (on site)			Dechlorination*, thermal desorption* and, Solidification/ stabilization*	Remedy changed because of community concerns. Amended remedy is dechlorination and thermal desorption followed by solidification/stabilization. ROD amendment issued on 09/30/91.	Antonio DeAngelo 404-562-8826
4	Aberdeen Pesticide Dump Fairway, NC (06/30/89)	Incineration (on site)			Thermal desorption *	Remedy changed because of community concerns, cost, and a preference for using an innovative technology. ROD amendment signed on 09/30/91.	Kay Crane 404-562-8795 Randy McElveen (NC) 919-733-2801
4	Cape Fear Wood Preserving, NC (06/30/89)	Bioremediation (ex situ) - slurry-phase		Yes		Original remedy called for soil washing followed by slurry-phase bioremediation of fines, based on an 80% reduction in volume of contaminated soil achieved by soil washing. Soil washing bidders claimed a 96% reduction in volume of contaminated soil, thus making slurry-phase bioremediation too costly for the 0.4% of contaminated fines remaining.	Jon Bornholm 404-562-8820
4	Geiger/C&M Oil, SC (06/01/87)	Incineration (on site)			Solidification/ stabilization*	Further investigation found that organics were not present at their previous levels. ROD amendment issued 07/13/93.	Sherry Panabaker 404-562-8810
4	Para-Chem Southern, Inc., SC (09/27/93)	Bioremediation (ex situ) - slurry-phase		Yes		Remedy canceled because of concerns about feasibility, performance, and treatment time. Will excavate and dispose off-site.	Judy Canova 803-896-4046
4	American Creosote Works (Jackson Plant), TN (01/05/89)	Incineration (on site)		Yes		Action completed as a removal by excavating and disposing off site. ESD issued in 1992.	Femi Akindale 404-347-7791
5	Acme Solvent Reclaiming, IL (09/27/85)	Incineration (on site)		Yes		PRPs excavated and disposed of soil off-site.	Deborah Orr 312-886-7576
5	Fort Wayne Reduction, IN (08/26/88)	Incineration (on site)			Incineration (off site)	Remedy changed to ROD contingency off-site incineration because of community concerns, cost, and implementability.	Fred Mickey 312-886-5123

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5	Ninth Avenue Dump, IN (06/30/89)	Incineration (on site)			Soil vapor extraction	Remedy changed because of cost. Soil vapor extraction will treat larger area than soil flushing remedy that was completed in 1994. Soil flushing removed most of the heavier contaminants. ROD amendment signed on 9/13/94.	Bernard Schorle 312-886-4746
5	Bofors Nobel, MI (09/17/90)	Incineration (on site)		Yes		Remedy changed from on-site incineration to disposal in an on-site landfill because of cost. Volume of material to be treated much greater than expected. ROD amendment signed on 07/22/92. Now proposing containment via slurry wall because of cost.	John Fagiolo 312-886-0800
5	Forest Waste Products, MI (03/31/88)	Incineration (on site)			Incineration (off site)	Original ROD specified either on-site or off-site incineration as the remedy. ESD signed on 05/04/93.	Beth Reiner 312-886-6337
5	Ott/Story/Cordova Chemical, MI (09/27/93)	Thermal desorption		Yes		The state revised the cleanup goals. Consequently, the amount of soils requiring remediation was reduced. Also shallow groundwater present at the site would continue to contaminate clean backfilled soil. Cost was also a factor. No alternative remedy has been selected at this time.	John Fagiolo 312-886-0800
5	Springfield Township Dump, MI (09/29/90)	Incineration (on site)		Yes		Remedy canceled because of community concerns. ROD amendment projected to be issued in Fall 1996. Remedy to be determined.	Kashual Khanna 312-353-2663
5	Thermo-Chem, Inc., OU 1, MI (09/30/91)	Soil vapor extraction	Air sparging			Added to enhance SVE system.	Jim Hahnenberg 312-353-4213
5	Arrowhead Refinery Co., MN (09/30/86)	Incineration (on site)			Solvent extraction*	Remedy was changed to solvent extraction because of cost-effectiveness and short-term effectiveness. ROD amendment signed on 02/09/94.	Edwin Smith 312-353-6571
5	Ritari Post and Pole, OU 1, MN (06/30/94)	Incineration (on site)			Incineration (off site)	Misinterpretation of ROD. Remedy now being reconsidered. Capping is a contingency.	Ramon Torres 312-886-3010
5	Fields Brook, OH (09/30/86)	Incineration (on site)			Incineration (off site)	Remedy changed because of cost, community concerns, and reduced concentration. ESD issued on 8/15/97.	Ed Hanlon 312-353-9228
5	Pristine, OH (12/31/87)	Incineration (on site)			Soil vapor extraction* and thermal destruction*	Misinterpretation of ROD specified in situ vitrification. This remedy was changed to SVE and thermal destruction. Thermal desorption was selected as the thermal destruction technology. ROD amendment issued on 03/30/90. (see below)	Tom Alcamo 312-886-7278
5	Pristine, OH (03/30/90) (Amendment)	Incineration (on site)			Thermal desorption*	1990 ROD amendment specified thermal destruction. Thermal desorption selected as the thermal destruction technology.	Tom Alcamo 312-886-7278

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REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
5	Skinner Landfill OU 2, OH (06/04/93)	Soil vapor extraction		Yes		Further investigation through a feasibility study indicated that the site conditions would not be amenable to SVE. Will cap instead.	Jamey Bell 312-886-6436
5	Van Dale Junkyard, OH (03/31/94)	Bioremediation (in situ) - other		Yes		Predesign sampling indicated that contaminant levels had decreased. No active bioremediation is occurring. The site will be capped and will rely on natural attenuation with monitoring.	Lawrence Schmitt 312-353-6565 James Campbell 412-351-6132
5	Zanesville Well Field, OH (09/30/91)	Soil vapor extraction	Air sparging			Implemented by PRPs to accelerate groundwater remediation.	Dave Wilson 312-886-1476
5	Zanesville Well Field, OH (09/30/91)	Soil washing		Yes		Will excavate and dispose off-site because soil volume was much smaller that originally projected.	Dave Wilson 312-886-1476
5	City Disposal Corporation Landfill, WI (09/28/92)	Soil vapor extraction		Yes		Rise in groundwater table prevented implementation of SVE. Remedy changed to capping with gas collection.	Russ Hart 312-886-4844 Mike Schmoller (WI) 608-275-3303
5	Hagen Farm, Groundwater Control OU, WI (09/30/92)	Bioremediation (in situ) - groundwater		Yes		Treatability studies indicated that bioenhancement would not provide any additional benefit. Relying on natural attenuation. Explanation of Significant Differences (ESD) signed on 08/27/96.	Steve Padovani 312-353-6755
6	Vertac, AR (09/27/90)	Incineration (on site)		Yes		Incinerator would not function properly. Community preferred landfilling and was cheaper. ROD amendment issued 9/17/96.	Phillip Allen 214-665-8516
6	Gulf Coast Vacuum Services, OU 1, LA (09/30/92)	Incineration (on site)			Bioremediation (ex situ)- land treatment	Agreement between PRPs and EPA to meet the treatment standards using bioremediation.	Kathleen Aisling 214-665-8509
6	MOTCO, TX (03/15/85)	Incineration (on site)			Incineration (off site)	Remedy changed because of contractor problems and cost. ESD has been issued.	Mary Ann Abramson 214-665-6754
6	Petro-Chemical Systems, Inc. OU 2, TX (09/06/91)	Air sparging			Bioremediation (in situ)- groundwater	Bioremediation thought to be more effective.	Chris Villarreal 214-665-6758

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Eighth Edition (November 1996)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
7	People's Natural Gas, IA (06/16/91)	Bioremediation (in situ) - other	Air sparging				Diana Engeman 913-551-7797
7	Hastings Groundwater Contamination (East Industrial), NE (09/28/90)	Incineration (on site)			Incineration (off site)	Remedy changed because volume of soil was less than originally projected. More cost-effective to incinerate off-site. ROD amendment issued 02/28/95.	Ron King 913-551-7063
7	Sherwood Medical, NE (09/28/93)	Thermal desorption			Soil vapor extraction (ex situ)	Soil vapor extraction (ex situ) will be more cost-effective. ESD issued 09/05/95.	Steve Auchterlonie 913-551-7778
7	Valley Park TCE Site, Wainwright OU, MO (09/29/94)	In situ air stripping		Yes		Air sparging would be difficult to implement and nearby residences might be adversely affected. Will do pump-and-treat instead. ESD issued on 04/02/96.	Steve Auchterlonie 913-551-7778 Dave Mosby (MO) 573-751-1288
7	Valley Park TCE Site, Wainwright OU, MO (09/24/94)	Thermal desorption			Soil vapor extraction (ex situ)*	Soil vapor extraction (ex situ) more cost-effective. ESD issued on 04/02/96.	Steve Auchterlonie 913-551-7778 Dave Mosby (MO) 573-751-1288
8	Broderick Wood Projects, CO (06/30/88)	Incineration (on site)		Yes	Incineration (off site)*	Remedy canceled based on new technical data and cost. Will excavate and recycle and incinerate off-site. ROD amendment signed on 09/24/91.	Armando Saenz 303-312-6559
8	Lockheed/Martin (Denver Aerospace), CO (Remedial Action) (09/24/90)	Soil vapor extraction and thermal desorption		Listing as a Superfund remedial action has been deleted.		Remedial action being handled as a RCRA corrective action.	George Dancik 303-312-6935 Charles Johnson (CO) 303-692-3348
8	Idaho Pole Company, MT (09/28/92)	Flushing (in situ)			Bioremediation (ex situ) - land treatment*	Further investigation indicated flushing (in situ) would not be effective. Soils were excavated and will be treated as part of the land treatment remedy. ESD issued on 05/21/96.	Jim Harris 406-441-1150

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Eighth Edition (November 1996)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
8	Summitville Mine, OU 1, CO (12/15/94)	This is a FY 1995 ROD and was not listed in the seventh edition. The FY 1995 ROD specified bioremediation (in situ)		Yes		When heap leach pad rinsed with water, cyanide concentrations were reduced and bioremediation was not necessary. ESD issued on 6/4/97.	James Hanley 303-312-6725 Victor Ketellepepper 303-312-6578
9	Motorola 52nd Street, AZ (09/30/88)	Soil vapor extraction	Air sparging				Fred Schauffler 415-744-2359 Mana Font 602-207-4194
9	Seal Beach Navy Weapons Station, IR Site 14, CA (DoD Action)	Soil vapor extraction		Yes		Research project, not a full-scale cleanup.	Ken Reynolds 619-532-2912
9	Hexcel, CA (09/21/93)	Air sparging, bioremediation (in situ) - groundwater, soil vapor extraction		Yes		Hexcel was removed from the National Priorities List (NPL) on November 1, 1993.	Mark Johnson 510-286-0305
9	Intel Mountain View (355 Middlefield Road), CA (06/09/89)	Soil vapor extraction		Yes		Groundwater table rose, leaving too little unsaturated soil to warrant SVE. Soils were excavated and aerated.	Elizabeth Adams 415-744-2235 Michael Maley 510-450-6159
9	Koppers Company, Inc. (Oroville Plant), CA (09/13/89)	Soil washing		Yes		Further analysis determined soil washing would be ineffective, more dioxins discovered and land use scenario changed. Soil will be disposed of in a landfill with the potential for two percent of the most contaminated soil treated through solidification/stabilization. ROD amendment issued on 8/29/96.	Fred Schauffler 415-744-2359
9	Koppers Company, Inc. (Oroville Plant), CA (09/13/89)	Bioremediation (in situ) - other		Yes		Presence of metals and dioxins made bioremediation infeasible, and land use scenario changed. Soil will be disposed of in a landfill with the potential for two percent of the most contaminated soil treated by solidification/stabilization. ROD amendment issued on 8/29/96.	Fred Schauffler 415-744-2359
9	Middlefield-Ellis-Whisman (MEW) - Siemins/Sobrato (455 & 487 Middlefield Road), CA (06/30/93)	Soil vapor extraction	Air sparging				Elizabeth Adams 415-744-2235

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Eighth Edition (November 1996)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 7TH EDITION)	8TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
9	Van Waters and Rogers, CA (09/30/91)	Soil vapor extraction		Yes		Site was proposed for listing on the NPL but has been removed. Responsibility was picked up under RCRA and subsequently dropped from RCRA authority.	Belinda Wei 415-744-2280 Duazo Ricco 510-268-0837
10	Eielson AFB, OUs 3, 4, and 5, AK (9/22/95)	This is a FY 1995 ROD and was not listed in the seventh edition. The FY 1995 ROD specified bioventing and soil vapor extraction.		Yes		Remedy changed to institutional controls because there was not enough contamination present to warrant active remediation. Groundwater also was contained, preventing risk due to groundwater.	Mary Jane Nearman 206-553-6642
10	Idaho National Engineering Laboratory, Pit 9 (OU7-10), ID (09/23/93)	Solvent extraction	Vitrification			Misinterpretation of the ROD.	Mary Jane Nearman 206-553-6642
10	USDOE Hanford 100 Area, OUs 100-BC-1, 100-DR-1, 100-HR-1, WA (9/27/95)	This is a FY95 ROD that was not listed in the seventh edition. The FY95 ROD specified thermal desorption for soil contaminated with organic compounds		Yes		Remedy changed to on-site disposal because further investigation did not indicate that organics were present.	Doug Sherwood 509-376-9529 Audrey Dove 509-376-6865

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Seventh Edition (September 1995): Additions, Changes, and Deletions from the Sixth Edition (September 1994)

The seventh edition of this report added information about 42 innovative treatment technologies selected for remedial action under FY 1994 RODs and eight innovative treatment technologies selected for seven RCRA corrective actions.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 6TH EDITION)	7TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	Linemaster Switch Corporation, CT (07/21/93)	Soil vapor extraction			Dual-phase extraction	Groundwater also is being treated with this technology.	Elise Jakabhazy 617-573-5760
2	American Thermostat, NY (06/29/90)	Thermal desorption	Thermal desorption (phase 2)			Project is being conducted in two phases. Phase 1 has been completed and is listed as a separate project.	Christo Tsiamis 212-637-4257
2	GCL Tie and Treating, NY (Removal Action)	Bioremediation (ex situ) - Composting			Thermal desorption (being implemented as a remedial action with the ROD signed 09/30/94)	Site is not amenable to composting because of the presence of long-chain PAHs and the time constraints of the removal process. A treatability study achieved over 90% reduction but little degradation of long chain carcinogenic hydrocarbons occurred.	Joe Cosentino 908-906-6983
2	General Motors Central Foundry Division (OU 1 and OU 2), NY (12/17/90) & (03/31/92)	Bioremediation (ex situ) - slurry-phase			Thermal desorption	Both OUs were combined under the thermal desorption remedy. ROD amended to combine both OUs under a thermal desorption remedy.	Lisa Jackson 212-637-4274
2	Pasley Solvents and Chemicals, Inc., NY (04/24/92)	Flushing (in situ) and soil vapor extraction	Air sparging		Soil vapor extraction and air sparging	SVE, in combination with air sparging, will eliminate the need for soil flushing. ROD amendment was signed 05/22/95.	Sherrel Henry 212-637-4273
3	Bendix, PA (09/30/88)	Soil vapor extraction			Mechanical aeration	It was determined that SVE was not a viable remedy; soil was too tightly compacted. No alternative has been selected. ESD issued on 11/22/95.	Jim Harper 215-597-6906
3	Brown's Battery Breaking Site, OU 2, PA (07/02/92)	Fuming gasification			Plasma high-temperature metals recovery	The name of the technology was changed to reflect the treatment process more accurately.	Richard Watman 215-566-3219
4	Helena Chemical, SC (09/08/93)	Bioremediation (ex situ) and dechlorination		Yes	Incineration (off site)	Technologies could not meet cleanup goal.	Bernie Hayes 404-562-8822
5	Carter Industries, MI (09/18/91)	Thermal desorption		Yes		Thermal desorption was too costly (approximately $300 per cu yd). It is less expensive to dispose of the wastes at TSCA landfill (approximately $186 per Ton).	Jon Peterson 312-353-1264

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Seventh Edition (September 1995) (Continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 6TH EDITION)	7TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
5	Cliffs/Dow Dump, MI (09/27/89)	Bioremediation (ex situ)		Yes		Remedy could not reduce concentrations of benzo(a)pyrene to acceptable level. Contaminated soil was excavated and placed in a permitted landfill.	Ken Glatz 312-886-1434
5	Electro-Voice, OU 1, MI (06/23/92)	Soil vapor extraction	Air sparging			Technology actually is a combination of SVE and air sparging called the Subsurface Volatilization and Ventilation System™.	Eugenia Chow 312-353-3156
5	Ionia City Landfill, MI (09/29/89)	Vitrification (in situ)		Yes		Remedy was canceled. Conditions at the site had changed since 1989. Project was implemented as a time critical removal action.	Michael Gifford 312-886-7257
5	Seymour Recycling, IN (09/30/86)	Bioremediation (in situ groundwater)		Yes		Bioremediation of groundwater was not actively pursued. Contamination degraded through natural attenuation.	Jeff Gore 312-886-6552
5	Verona Well Field OU 2, MI (06/28/91)	Soil vapor extraction	Soil vapor extraction			Conducting soil vapor extraction at two separate sites under this ROD: Annex area and Paint shop area. Projects are listed as separate entries in the ASR seventh edition.	Janice Bartlett 312-886-5438
5	Wayne Reclamation and Recycling, IN (03/30/90)	Soil vapor extraction	Air sparging			Air sparging was added under the existing ROD to treat groundwater.	Duane Heaton 312-886-6399
6	Koppers/Texarkana, TX (09/23/88)	Soil washing		Yes		Volume of soil was not as large as originally had been projected. The small volume did not warrant bringing a soil washing unit on-site. Will excavate and dispose of soil off-site.	Ursula Lennox 214-665-6743
6	Koppers/Texarkana, TX (09/23/88)	Flushing (in situ)		Yes		Flushing (in situ) was never intended as a treatment at the site. Misinterpretation of the ROD during ROD analysis.	Ursula Lennox 214-665-6743
8	Chemical Sales Company (OU 1), CO (06/27/91)	Soil vapor extraction	Air sparging			Air sparging was added under the existing ROD to treat groundwater.	Armando Saenz 303-312-6559
8	Mouat Industries, MT (Removal Action)	Chemical treatment		Yes		Reducing chromium VI to chromium III not considered innovative.	Ron Bertran 406-449-5720

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Seventh Edition (September 1995) (Continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 6TH EDITION)	7TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
9	Phoenix-Goodyear Airport Area (North and South Facilities), AZ (09/26/89)	Soil vapor extraction	Soil vapor extraction			Site is divided into 2 areas: North area & South area. Each area is listed as an individual project in the seventh edition ASR.	Craig Cooper 415-744-2370 Rusty Harris-Bishop 415-744-2365 Nancy Moore (AZ) 602-207-4180
9	Fairchild Semiconductor, CA (06/30/89)	Two listings for soil vapor extraction	Three more soil vapor extraction projects			Soil vapor extraction systems are being implemented at 5 different areas at the site.	Elizabeth Adams 415-744-2235
9	Indian Bend Wash, AZ (09/27/93)	Soil vapor extraction	Four distinct areas using soil vapor extraction			SVE is being conducted at four distinct areas; areas 6, 7, 8, and 12, at the site. Each site is considered as an individual project.	Emily Roth 415-744-2247
9	Intersil, CA (09/27/90)	Soil vapor extraction				Site renamed to Intersil/Siemens (Intersil)	Belinda Wei 415-744-2280
9	Solvent Service, CA (09/27/93)	Soil vapor extraction			Soil vapor extraction under RCRA corrective action	Project was changed from a Superfund remedial action to a RCRA corrective action.	Tony Mancini 510-286-0825
10	Fairchild AFB Priority 1 OUS (OU 1) Craig Rd Landfill, WA (02/13/93)	Soil vapor extraction		Yes		Remedy was not implemented because of the following concerns: •Generation of combustible gases •Heterogeneous stratigraph •Reluctance to put holes into the landfill, which could lead to leaching of contaminants	Cami Grandinetti 206-553-8696
10	Gould, Inc., OR (03/31/88)	Soil washing		Yes		Will cap the landfill and conduct pump-and-treat operations. Remedy was shown to be ineffective due to varying site conditions and problems with the technology.	Chip Humphries 503-326-2678

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Seventh Edition (September 1995) (Continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 6TH EDITION)	7TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
10	Naval Submarine Base, Bangor Site A, OU 1, WA (12/10/91)	Soil washing			Flushing (in situ)	Will excavate and place soil in a lined pit. Soil will be sprayed with water and leachate and will be collected and treated.	Harry Craig 503-326-3689 Craig Thompson (WA) 360-407-7234 Chris Drury (Navy) 206-396-0062
10	Union Pacific Railroad Sludge Pit, ID (09/10/91)	Flushing (in situ)		Yes		Remedy was not implemented. Excavation of sludge did not indicate that contaminants were present. Amended ROD was signed 9/94. Will excavate and treat off-site, in addition to a pump-and-treat operation.	Ann Williamson 206-553-2739 Clyde Cody (ID) 208-334-0556
10	Fort Lewis Military Res. Landfill 4 and Solvent Refined Coal Plant, WA (09/24/93)	Soil washing			Thermal desorption	ROD specified soil washing or thermal desorption as the remedy. Thermal desorption was selected based on the results of a treatability study.	Bob Kievit 206-753-9014
10	Eielson Air Force Base, AK (9/29/92)	Bioremediaiton (in situ)-bioventing and soil vapor extraction		Soil vapor extraction		Soil vapor extraction written into ROD as a contingency.	Mary Jane Nearman 206-553-6642 Rielle Markey (AK) 907-451-2117

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Sixth Edition (September 1994): Additions, Changes, and Deletions from the Fifth Edition (September 1993)

The sixth edition of this report added information about 53 innovative treatment technologies selected for remedial action under FY 1993 RODs. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 5TH EDITION)	6TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	Union Chemical Co., OU 1, ME (12/27/90)	Thermal desorption (In situ)			Soil vapor extraction	It was determined that SVE would be the more cost-effective of the two. ESD was signed April 1994.	Terry Connelly 617-573-9638 Christopher Rushton (ME DEP) 207-287-2651
1	Tibbetts Road, NH (09/29/92)	Flushing (in situ)		Yes		Misinterpretation of ROD during ROD analysis. Soil was not targeted for treatment.	Darryl Luce 617-573-5767 Mike Robinette (NH) 603-271-2014
2	Ewan Property, OU 2, NJ (09/29/88)	Soil washing and solvent extraction		Yes		Reevaluation of site found significantly less contaminated soil than originally had been estimated. Soil will be disposed of off-site. ESD was signed July 1994.	Kim O'Connell 212-637-4399
2	Naval Air Engineering Center, OU 7, Interim Action, NJ (03/16/92)	Flushing (in situ)		Yes		Misinterpretation of the ROD during ROD analysis.	Jeff Gratz 212-637-4320 Robert Wing 212-264-8670
2	Solvent Savers, NY (09/28/90)	Soil vapor extraction		Yes		Soil vapor extraction is a secondary remedy that may be used instead of thermal desorption, the primary remedy, if treatability studies show it to be effective.	Lisa Wong 212-637-4267
3	U.S. Titanium, VA (11/21/89)	Flushing (in situ)			Neutralization with lime (ex situ)	Treatability studies indicated that the technology was not feasible. ESD is under preparation.	Vance Evans 215-597-8485 Jeff Howard (VA) 804-762-4203
3	L.A. Clarke & Sons, OU 1 (Soils), VA (03/31/88)	Bioremediation (in situ)		Yes		Facility is no longer in operation, and excavation can be done. Remedies being considered include thermal desorption.	Andy Palestini 215-597-1286

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Sixth Edition (September 1994)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 5TH EDITION)	6TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
3	L.A. Clarke & Sons, OU 1 (Soils), VA (03/31/88)	Flushing (in situ)		Yes		Facility is no longer in operation, and remedies being considered include thermal desorption.	Andy Palestini 215-597-1286
3	L.A. Clarke & Sons, Lagoon Sludge OU, VA (03/31/88)	Bioremediation (ex situ)			Reuse off-site as fuel	Technology changed because of uncertainty about the ability of bioremediation to reach treatment goals. ESD was signed on 3/94.	Andy Palestini 215-597-1286
3	Henderson Road, PA (06/30/88)	Soil vapor extraction		Yes		Conducted air injection only to facilitate pump-and-treat system. Vapors were not extracted. Further investigation revealed that the vadose zone was not an area of concern.	Joe McDowell 215-566-3192
4	Cabot Carbon/Koppers (Groundwater), FL (09/27/90)	Bioremediation (in situ) - groundwater		Yes		Groundwater is not being treated; only soil is being treated.	Patsy Goldberg 404-562-8543
4	Benfield Industries, NC (07/31/92)	Soil washing and bioremediation (ex situ) (slurry-phase)			Bioremediation (ex situ) - land treatment	Land treatment was determined to be a more cost-effective technology.	Jon Bornholm 404-562-8820
4	Charles Macon Lagoon, Lagoon #10, NC (09/31/91)	Bioremediation (ex situ)		Yes		Treatability study indicated that the technology could not treat the contaminants of concern because of materials problems. Will excavate and dispose of wastes off-site. ROD amend-ment was signed in 3/94.	Geizelle Bennett 404-562-8824 David Lown (NC) 919-733-2801
4	Palmetto Wood Preserving, SC (09/30/87)	Chemical treatment		Yes		Waste will be disposed of more cost-effectively off-site.	Al Cherry 404-342-7791
4	Arlington Blending & Packaging Co., OU 1, TN (06/28/91)	Dechlorination		Yes		Another disposal method is likely to be used.	Derek Matory 404-562-8800
5	South Andover Salvage Yard, OU 2, MN (12/24/91)	Bioremediation (ex situ)		Yes	Thermal treatment	Technology changed to off-site thermal treatment (either thermal desorption or incineration) because of reduced volume of contamination found during RD investigations. ROD amendment was signed 5/31/94.	Bruce Sypniewski 312-886-6189
5	Allied Chem & Ironton Coke, OU 2, OH (12/28/90)	Bioremediation (in situ)	Bioremediation (ex situ) (magneti-cally enhanced land farming)			Adding technology to treat more highly contaminated soil. ROD Amendment issued on 9/4/97.	Tom Alcamo 312-886-7278

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Sixth Edition (September 1994)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 5TH EDITION)	6TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
5	Allied Chem & Ironton Coke, OU 2, OH (12/28/90)	Bioremediation (in situ)		Yes		Adding technology to treat more highly contaminated soil. ROD Amendment issued on 9/4/97.	Tom Alcamo 312-886-7278
5	United Scrap Lead/SIA, OH (09/30/88)	Soil washing		Yes		Determined to be too expensive. Soil disposed off-site if lead levels above 1,550 ppm; containment of soil below this level. ROD amendment issued on 6/27/97.	Anita Boseman 312-886-6941 Timothy Hull (OH) 513-285-6357
5	MacGillis and Gibbs Co./Bell Lumber and Pole Co., MN (12/31/92)	Soil washing and bioremediation (ex situ) of fines		Yes	Incineration (on site)	Incineration was contingency remedy in ROD. State had concerns about effective means of soil washing, and cost of incineration has decreased. ESD will be signed in fall 1994.	Daryl Owens 312-886-7089
6	Fruitland Drum, NM (09/08/90)	Dechlorination			Incineration (off site)	Dechlorination is not being pursued because of cost considerations.	Gregory Fife 214-655-6773
6	Holloman AFB, Main POL Area, NM	Bioremediation (in situ) - groundwater		Yes		Groundwater remediation is not planned for this area.	Ron Stirling (USACE) 402-221-7664
6	Holloman AFB, Main POL Area, NM	Air sparging		Yes		Groundwater remediation is not planned for this area.	Ron Stirling (USACE) 402-221-7664
6	South Valley, NM (09/30/88)	Soil vapor extraction		Yes		Determined there was insignificant concentration to warrant remediation. No further action.	Bert Gorrod 214-655-6779
6	Tinker AFB (Soldier Creek Bldg. 3001), OK (08/16/90)	Soil vapor extraction		Yes		Determined that SVE was not viable. No alternative has been selected.	Susan Webster 214-655-6784 Major Richard Ashworth (USAF) 405-734-3058
8	Rocky Mountain Arsenal, M-1 Basins (OU 16), CO (02/26/90)	In situ vitrification		Yes		Remedy has been canceled because of problems with the contractor. New ROD is being negotiated.	Connally Mears 303-293-1528
8	Portland Cement Co. (Kiln Dust No. 2 and No. 3) OU2, UT (03/31/92)	Chemical treatment		Yes		Technology is not considered innovative.	Mike McCeney 303-293-1526

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Sixth Edition (September 1994)(continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 5TH EDITION)	6TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
9	Mesa Area Groundwater Contamination, AZ (09/27/91)	Soil vapor extraction		Yes		Site has been removed from National Priorities List (NPL), referred to the state	Maurice Chait 602-962-2187 Richard Oln 602-207-4176
9	Castle Air Force Base, OU 1, CA (08/12/91)	Bioremediation (in situ) - groundwater		Yes	Pump and treat with air stripping	Bench-scale test indicated that the technology did not work. No ESD or ROD amendment is being issued.	David Roberts 415-744-1487 Brad Hicks (USAF) 209-726-4841
9	Teledyne Semiconductors (Spectra Physics), CA (03/22/91)	Soil vapor extraction		Yes		ROD was misinterpreted. SVE was intended only for Spectra Physics, the adjacent site.	Sean Hogan 415-744-2233 Carla Dube 510-286-1041
9	FMC (Fresno), CA (06/28/91)	Soil washing		Yes		Soil washing did not work because the soil contained too many fines. Thermal desorption and solidification and stabilization are being considered as possible remedies.	Tom Dunkelman 415-744-2296 Mike Pfister (CA) 209-297-3934
9	Signetics (Advanced Micro Devices 901), CA (09/11/91)	Soil vapor extraction		Yes		Site is subject to a combined ROD for Signetics, AMD 901/ 902 and TRW Microwave site. SVE is not being done at the TRW OU. ROD was misinterpreted.	Darrin Swartz-Larson 415-744-2233 Kevin Graves (CA) 510-286-0435
9	Sacramento Army Depot, Oxidation Lagoons, OU 4, CA (09/30/92)	Soil washing		Yes		Technology canceled because of cost; solidification is being considered as an alternative.	Marlin Mezquita 415-744-2393
10	McChord AFB Washrack Treatment Area, AK (09/28/92)	Bioremediation (ex situ)		Yes		Additional studies showed that treatment is not needed.	Marie Jennings 206-553-1173

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Fifth Edition (September 1993): Additions, Changes, and Deletions from the Fourth Edition (October 1992)

The fifth edition of this report added information about 49 innovative treatment technologies selected for remedial action under FY 1992 RODs and 15 innovative treatment technologies used in removal actions. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 4TH EDITION)	5TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	Re-Solve, MA (09/24/87)	Dechlorination		Yes		Pilot study showed that dechlorination increased the volume and that the waste still required incineration. An ESD to incinerate residuals off-site is in peer review.	Joe Lemay 617-573-9622
1	Pinette's Salvage Yard, ME (05/30/89)	Solvent extraction		Yes		Will incinerate off-site.	Ross Gilleland 617-573-5766
2	Naval Air Engineering Center, OU 1, NJ (02/04/91)	Flushing (in situ)		Yes		Remedy involves pump-and-treat system, with on-site discharge. Soil is not being targeted.	Jeff Gratz 212-637-4320
2	Naval Air Engineering Center, OU 2, NJ (02/04/91)	Flushing (in situ)		Yes		Remedy involves pump-and-treat system, with on-site discharge. Soil is not being targeted.	Jeff Gratz 212-637-4320
2	Naval Air Engineering Center, OU 4, NJ (09/30/91)	Flushing (in situ)		Yes		Remedy involves pump-and-treat system, with on-site discharge. Soil is not being targeted.	Jeff Gratz 212-637-6320
2	Caldwell Trucking, NJ (09/25/86)	Thermal desorption		Yes		Thermal desorption is not necessary because highly contaminated soil will be incinerated off-site. Remainder of soil will be stabilized. ESD issued.	Ed Finnerty 212-637-4367
3	Tobyhanna Army Depot, PA (Non-Superfund project)	Bioremediation (in situ)		Yes		Will conduct ex situ passive volatilization.	Drew Lausch 215-597-3161 Ross Mantione (Tobyhanna) 717-894-6494
4	Smith's Farm Brooks, KY (09/30/91)	Dechlorination	Thermal desorption			Will alter chemistry to achieve dechlorination during thermal desorption.	Tony DeAngelo 404-562-8826
4	American Creosote Works, FL (09/28/89)	Soil washing		Yes		Bench-scale study of soil washing showed that the concentrations of carcinogenic PAHs were not reduced adequately. Dioxins also were discovered at much higher concentrations.	Mark Fite 404-562-8927

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Fifth Edition (September 1993) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 4TH EDITION)	5TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
4	American Creosote Works, FL (09/28/89)	Bioremediation (ex situ)		Yes		Bench-scale study of bioremediation (ex situ) showed that the concentrations of carcinogenic PAHs were not reduced adequately. Dioxins also were discovered at much higher concentrations.	Mark Fite 404-562-8927
4	Hollingsworth Solderless, FL (04/10/86)		Soil vapor extraction			Listed as soil aeration in the third edition.	John Zimmerman 404-562-8936
5	Cliffs/Dow Dump, MI (09/27/89)	Bioremediation (in situ)		Yes		Bioremediation (in situ) was a misinterpretation of the ROD. All soil will be excavated and treated by bioremediation (ex situ).	Ken Glatz 312-886-1434
6	Tenth Street Dump/Junkyard, OK (09/27/90)	Dechlorination		Yes		Remedy has been suspended because of difficulties in implementation and escalating cost; Actual cost was double the cost projected in ROD. ROD amendment to cap in place is being issued.	Mike Overbay 214-655-8512
7	Fairfield Coal & Gas, IA (09/21/90)	Bioremediation (in situ)		Yes		Pilot study showed in situ bioremediation was too costly. It appears that the present pump-and-treat system will achieve cleanup levels.	Bruce Morrison 913-551-7755
8	Sand Creek Industrial OU 5, CO (09/28/90)	Soil washing			Thermal desorption	Soil washing did not meet performance standards and was expensive. ROD amendment was issued in early September 1993.	Erna Acheson 303-312-6753
9	Koppers Company (Oroville), CA (04/04/90)	Bioremediation (ex situ)		Yes		Misinterpretation of ROD during ROD analysis.	Fred Schlauffler 415-744-2359
9	Signetics (AMD 901) TRW OU, CA (09/11/91)		Soil vapor extraction			Remedy added.	Joe Healy 415-744-2331
9	Teledyne Semiconductors, CA (03/22/91)		Soil vapor extraction			Dropped by mistake from fourth edition.	Kevin Graves (CA) 510-286-0435 Sean Hogan 415-744-2233

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Fifth Edition (September 1993) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 4TH EDITION)	5TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
10	IDEL Warm Waste Pond, ID (12/05/91)	Acid extraction		Yes		Treatability study of acid extraction did not achieve good extraction rates. Did not reduce the volume of waste. Will excavate, consolidate, and cap.	Linda Meyer 206-553-6636 Nolan Jenson (DOE) 208-526-0436
10	IDEL Warm Waste Pond, ID (12/05/91)	Soil washing		Yes		Treatability study of soil washing did not achieve acceptable results. Did not reduce the volume of waste. Will excavate, consolidate, and cap.	Linda Meyer 206-553-6636 Nolan Jenson (DOE) 208-526-0436

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Fourth Edition (October 1992): Additions, Changes, and Deletions from the Third Edition (April 1992)

The fourth edition of this report added information about 10 innovative treatment technologies selected for remedial action under FY 1992 RODs and 21 innovative treatment technologies implemented at non-Superfund sites. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 3RD EDITION)	4TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Lipari Landfill Marsh Sediment, NJ (07/11/88)		Thermal desorption			Missed during original ROD analysis.	Tom Graff 816-426-2296
2	GE Wiring Devices, PR (09/30/88)	Thermal desorption			Soil washing		Caroline Kwan 212-637-4275
5	University of Minnesota, MN (06/11/90)	Thermal desorption		Yes	Incineration (in the fifth edition)	An ESD was issued in August 1991 to change remedy to thermal desorption *or* incineration. Incineration was chosen because it was the less expensive of the two.	Darrel Owens 312-886-7089
6	Sol Lynn/Industrial Dechlorination Transformers, TX (03/25/88)	Dechlorination		Yes		Discontinued because of difficulties in implementation.	John Meyer 214-667-6742
6	Koppers/Texarkana, TX (09/23/88)	Soil washing	In situ flushing			Remedy added by ROD amendment.	Ursula Lennox 214-655-6735
9	Poly Carb, NV (Removal)	Bioremediation (in situ)			Bioremediation (ex situ)	Reclassified technology.	Bob Mandel 415-744-2290
9	Teledyne Semiconductors, CA (03/22/91)	Soil vapor extraction		Yes		Mistakenly deleted from report.	Sean Hogan 415-744-2233
10	Gould Battery, OR (03/31/88)	Soil washing	Soil washing			Missed during original ROD analysis.	Chip Humphries 503-326-2678

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Fourth Edition (October 1992): Additions, Changes, and Deletions from the Third Edition (April 1992)

The fourth edition of this report added information about 10 innovative treatment technologies selected for remedial action under FY 1992 RODs and 21 innovative treatment technologies implemented at non-Superfund sites. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 3RD EDITION)	4TH EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Lipari Landfill Marsh Sediment, NJ (07/11/88)		Thermal desorption			Missed during original ROD analysis.	Tom Graff 816-426-2296
2	GE Wiring Devices, PR (09/30/88)	Thermal desorption			Soil washing		Caroline Kwan 212-637-4275
5	University of Minnesota, MN (06/11/90)	Thermal desorption		Yes	Incineration (in the fifth edition)	An ESD was issued in August 1991 to change remedy to thermal desorption *or* incineration. Incineration was chosen because it was the less expensive of the two.	Darrel Owens 312-886-7089
6	Sol Lynn/Industrial Dechlorination Transformers, TX (03/25/88)	Dechlorination		Yes		Discontinued because of difficulties in implementation.	John Meyer 214-667-6742
6	Koppers/Texarkana, TX (09/23/88)	Soil washing	In situ flushing			Remedy added by ROD amendment.	Ursula Lennox 214-655-6735
9	Poly Carb, NV (Removal)	Bioremediation (in situ)			Bioremediation (ex situ)	Reclassified technology.	Bob Mandel 415-744-2290
9	Teledyne Semiconductors, CA (03/22/91)	Soil vapor extraction		Yes		Mistakenly deleted from report.	Sean Hogan 415-744-2233
10	Gould Battery, OR (03/31/88)	Soil washing	Soil washing			Missed during original ROD analysis.	Chip Humphries 503-326-2678

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Third Edition (April 1992): Additions, Changes, and Deletions from the Second Edition (September 1991)

The third edition of this report added information to the 70 innovative treatment technologies selected for remedial actions under FY 1991 RODs. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 2ND EDITION)	3RD EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
2	Marathon Battery, NY (09/30/88)	Thermal desorption		Yes		During design, soil gas concentration at hot spots was below state standards. Groundwater monitoring will continue.	Pam Tames 212-264-1036
2	Goose Farm, NJ (09/27/85)	Flushing (in situ)		Yes		Incorrectly classified. A pump-and -treat system with reinjection of treated water is being used.	Laura Lombardo 212-264-6989
2	GE Wiring Services, PR (09/30/88)	Soil washing			Thermal desorption	Possible pre-wash of debris with surfactants.	Caroline Kwan 212-637-4275
4	Coleman-Evans Wood Preserving, FL (09/26/90)	Soil washing		Yes	Incineration	Problems due to the presence of furans; incineration is likely.	Tony Best 404-347-2643
5	Sangamo/Crab Orchard National Wildlife Refuge, IL (08/01/90)	In situ vitrification			Thermal desorption	ROD specified the remedy as in situ vitrification or incineration; incineration was chosen.	Nan Gowda 312-353-9236
5	Anderson Development, MI (09/28/90)	In situ vitrification		Yes		Because of concern on the part of the community, the remedy was changed. A ROD amendment was signed on 9/30/91, and an ESD was signed on 10/2/92.	Jim Hahnenberg 312-353-4213
5	U.S. Aviex, MI (09/07/88)	Flushing (in situ)		Yes		Cleanup levels were reached by natural attenuation.	Robert Whippo 312-886-4759
6	Atchison/Santa Fe/Clovis, NM (09/23/88)	Bioremediation (ex situ)		Yes			Ky Nichols 214-655-6783
6	Crystal Chemical, TX (09/27/90)	In situ vitrification		Yes		Remedy was reconsidered after commercial availability of the technology was delayed. Revised remedy will consist of capping and off-site disposal and consolidation of soils.	Lisa Price 214-655-6735
9	Solvent Service, CA (09/27/90)	Bioremediation (in situ)		Yes		ROD was misinterpreted during ROD analysis.	Kevin Graves 510-286-0435 Steve Morse (CA) 570-286-0304

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Third Edition (April 1992) (continued)

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 2ND EDITION)	3RD EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
9	Poly Carb, NV (Removal)	Bioremediation (ex situ)			Bioremediation (in situ)	Reclassified technology.	Bob Mandel 415-744-2290

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Second Edition (September 1991): Additions, Changes, and Deletions from the First Edition (January 1991)

The second edition of this report added information about 45 treatment technologies selected for remedial actions in RODs signed during fiscal year (FY) 1990 and 18 innovative treatment technologies used in removal actions. Other changes are listed below.

REGION	SITE NAME, STATE (ROD DATE)	TECHNOLOGY (LISTED IN 1ST EDITION)	2ND EDITION			COMMENTS	CONTACTS/PHONE
			ADDED	DELETED	CHANGED TO		
1	Re-Solve, MA (09/24/87)	Chemical extraction		Yes	Dechlorination	Reclassified technology.	Lorenzo Thantu 212-637-4240
2	GE Wiring Services, PR (09/30/88)	Chemical treatment			Soil washing	Reclassified technology.	Caroline Kwan 212-637-4275
2	SMS Instruments (Deer Park), NY (09/29/89)	Chemical treatment				ROD was misinterpreted during ROD analysis.	Miko Fayon 212-637-4250
3	Leetown Pesticides, WV (03/31/86)	Bioremediation		Yes		No further action. Risk was re-evaluated and it was determined that risk was not sufficient for remedial action.	Andy Palestini 215-597-1286 Philip Rotstein 215-566-3232
3	Harvey-Knott Drum, DE (09/30/85)	Flushing (in situ)		Yes (changed to soil vapor extraction in third edition)		During remedial design, sampling indicated VOCs were no longer present in the soils. Heavy metals remained at the surface. An ESD was issued in December 1992. Remedy will consist of capping the site.	Kate Lose 215-566-3240
6	Sol Lynn/Industrial Transformers, TX (03/25/88)	Thermal desorption			Dechlorination	Reclassified technology.	John Meyer 214-665-6742
10	Northwest Transformer, WA (09/15/89)	In situ vitrification		Yes		Technology dropped because commercial availability was delayed.	Christine Psyk 206-553-6519

Information on the date and issuance of Explanations of Significant Differences (ESDs) and ROD Amendments is not complete.

Appendix E

Superfund Remedial Actions: Rods Selecting Natural Attenuation

Superfund Remedial Actions:

RODs Selecting Natural Attenuation

Region	Site Name, State	ROD Date
1	Brunswick Naval Air Station Site 9 OU6, ME	9/28/99
1	Brunswick Naval Air Station, ME	9/30/94
1	BURGESS BROTHERS LANDFILL OU1, VT	9/25/98
1	Cannon Engineering, MI	3/31/88
1	Coakley Landfill, NH	9/30/94
1	Dover Municipal Landfill, NH	9/10/91
1	FLETCHER'S PAINT WORKS & STORAGE OU1, NH	9/30/98
1	Fort Devens AOC 43 G & 43 J, MA	10/17/96
1	FORT DEVENS OU5, MA	2/18/98
1	Gallups Quarry, CT	9/30/97
1	Mottolo Pig Farm, NH	3/29/91
1	NEW HAMPSHIRE PLATING CO. OU1, NH	9/28/98
1	Pease Air force Base, Zone 1, NH	6/26/95
1	Pease Air force Base, Zone 2, NH	9/18/95
1	Pease Air force Base, Zone 3, NH	9/26/95
1	Peterson/Puritan, RI	9/30/93
1	Picillo Farm, RI	9/27/93
1	PSC Resources, MA	9/15/92
1	Savage Municipal Water Supply, NH	9/27/91
1	TIBBETTS ROAD OU1, NH	9/28/98
1	Town Garage/Radio Beacon (Holton Circle Ground Water Contamination), NH	9/30/92
1	Western Sand & Gravel, RI	4/16/91
2	Carroll and DubiesSewage Disposal, NY	9/30/96
2	Conklin Dumps, NY	3/29/91
2	DUPONT /NECCO PARK OU1, NY	9/18/98
2	Forest Glen Subdivision Ous 2 & 3, NY	9/30/99
2	Global Landfill, OU 2, NJ	9/29/97
2	GOLDISC RECORDINGS, INC. OU2, NY	9/30/98
2	Islip Municipal Sanitary Landfill, NY	9/30/92
2	Johnstown City Landfill, NY	3/31/93
2	Juncos Landfill, PR	10/5/93
2	Kin-Buc Landfill, NJ	9/28/92
2	Malta Rocket Fuel Area, NY	7/13/96
2	Marathon Battery, NY	9/30/88
2	Naval Air Engineering Station, Area I and J, NJ	1/5/95
2	Naval Air Engineerining Station Areas I & J groundwater OU 26, NJ	9/27/99
2	NAVAL WEAPONS STATION EARLE (SITE A) OU3, NJ	9/29/98
2	Naval Weapons Station, Earle, OU 2 Site 19, NJ	9/25/97
2	Plattsburg AFB, OU 2, NY	3/31/95
2	Preferred Plating Corporation, NY	9/30/97
2	Renora, NJ	9/29/87
2	Ringwood Mines/Landfill, NJ	9/29/88
2	Robintech, NY	7/25/97
2	ROSEN BROTHERS SCRAP YARD/DUMP OU1, NY	3/23/98
2	Sarney Farm, NY	9/27/90
2	Tutu Well Field, VI	8/5/96
2	Woodland Routes 72 Dump and 532 Dump , NJ	7/01/99
2	YORK OIL CO. OU2, NY	9/29/98
3	ALLEGANY BALLISTICS LABORATORY (USNAVY) OU5, WV	6/30/98
3	Bell Landfill, PA	9/30/94
3	Dover AFB, Target Area 1 of Area 6, DE	9/26/95
3	Dover AFB, Target Area 3 of Area 6, DE	9/26/95
3	Dover Air Force Base, Fire Training Area 3, East Management Unit, DE	9/30/97
3	Dover Air Force Base, Landfill 13, East Management Unit, DE	9/30/97
3	Dover Air Force Base, Liquid Waste Disposal Area 14 and Landfill 15, Area 1, East Management Unit, DE	9/30/97
3	Dover Gas Light, DE	8/16/94
3	East Mt. Zion, PA	6/29/90
3	MALVERN TCE OU1, PA	11/26/97
3	Mid-Atlantic Wood Preservers, MD	12/31/90
3	New Castle Spill, DE	9/28/89
3	OHIO RIVER PARK OU3, PA	9/17/98
3	OSBORNE LANDFILL OU2, PA	12/30/97
3	Rodale Manufacturing Co. Inc. Site OU 1, PA	9/30/99
3	Tobyhanna Army Depot, OU 1 (Areas A & B), PA	9/30/97
3	Westline, PA	6/29/88
3	Woodlawn Landfill Site, MD	9/30/99
4	Aberdeen Pesticide Dumps OU 5, NC	6/4/99
4	Agrico Chemical, FL	8/18/94
4	Anodyne (OU1), FL	6/17/93
4	Arlington Blending and Packaging, TN	7/24/97
4	B & B Chemical, FL	9/12/94
4	BMI-Textron, FL	8/11/94
4	Cecil Field Naval Air Station (Site 8) OU 3, FL	8/25/99
4	Cecil Field Naval Air Station OU 7, FL	5/12/99
4	CECIL FIELD NAVAL AIR STATION OU6, FL	9/25/98
4	CECIL FIELD NAVAL AIR STATION OU8, FL	8/27/98
4	Cecil Field Naval Air Station, OU 2, FL	6/24/96
4	Cedartown Industries, GA	5/7/93
4	Cedartown, GA	11/2/93
4	Cherry Point Marine Air Corps Station OU 2, NC	9/29/99

Superfund Remedial Actions:

RODs Selecting Natural Attenuation (continued)

Region	Site Name, State	ROD Date
4	Chevron Chemical Company, FL	5/22/96
4	Davie Landfill, FL	8/11/94
4	DAVIS PARK ROAD TCE OU1, NC	9/29/98
4	Diamond Shamrock Landfill, GA	5/3/94
4	Dubose Oil Products, FL	3/29/90
4	FCX, Inc. (Statesville Plant), OU 3, NC	9/30/96
4	FLANDERS FILTERS INC OU1, NC	9/18/98
4	GEIGER (C & M OIL) OU1, SC	9/9/98
4	Hercules 009 Landfill, GA	3/25/93
4	Homestead Air Force Base Ous 18, 26, 28, & 29, FL	3/15/99
4	Insterstate Lead Co. OU 3, AL	9/29/95
4	Interstate Lead Co. (ILCO), AL	9/30/91
4	JACKSONVILLE NAVAL AIR STATION OU1, FL	8/3/98
4	Murray-Ohio Dump, TN	6/17/94
4	National Starch & Chemical Co, OU 4, NC	10/6/94
4	Redwing Carriers/Saraland, AL	12/15/92
4	Reeves Southeastern Galvanizing (OU2), FL	9/9/93
4	SAVANNAH RIVER SITE (USDOE) OU27, SC	8/14/98
4	Standard Auto Bumper, FL	12/10/93
4	Taylor Road Landfill, FL	9/29/95
4	Townsend Saw Chain Company, SC	12/19/96
4	WHITEHOUSE OIL PITS OU1, FL	9/24/98
4	Wingate Road Municipal Incinerator Dump and Landfill, Fl	5/14/96
4	Yellow Water Road, FL	6/30/92
5	A & F Materials Reclaiming, IL	8/14/86
5	Adams County Quincy Landfill Sites #2 & #3, IL	9/30/93
5	Agate Lake Scrap Yard, MN	12/28/93
5	Albion-Sheridan Township, Landfill, MI	3/28/95
5	Alsco Anaconda, OH	9/30/92
5	Bendix Site, St. Joseph, MI	9/30/97
5	Charlevoix Municipal Well Field, MI	9/30/85
5	Cliff/Dow Dump, MI	9/27/89
5	Dakue Sanitary Landfill, MN	6/30/93
5	DUPAGE COUNTY LANDFILL/BLACKWELL FOREST OU1, IL	9/30/98
5	Electro-Voice OU2, MI	9/21/99
5	Fadrowski Drum Disposal, WI	6/10/91
5	Galen Myers Dump.Drum Salvage, IN	9/29/95
5	H.O.D. LANDFILL OU1, IL	9/28/98
5	Hechimovich Sanitary Landfill, WI	9/6/95
5	Kohler Complany Landfill, Wi	6/26/96
5	Oak Grove Sanitary Landfill, MN	12/21/90
5	Outboard Marine Company/Waukegan Coke Plant, IL	9/30/99
5	PENTA WOOD PRODUCTS OU1, WI	9/29/98

Region	Site Name, State	ROD Date
5	PETOSKEY MUNICIPAL WELL FIELD OU1, MI	9/30/98
5	Prestolite Battery, IN	8/23/94
5	Reilly Tar and Chemical (Indianapolis Plant), OU 5, IN	6/30/97
5	Roto-Finish, MI	3/31/97
5	Sauk County Landfill, OU 2, WI	9/28/95
5	Tippecanoe Sanitary Landfill, Inc., IN	9/30/97
5	Twin Cities AF Reserve (SAR Landfill), MN	3/31/92
5	Wheeler Pit, WI	9/28/90
5	WOODSTOCK MUNICIPAL LANDFILL, IL	7/15/98
5	Wright Patterson Air Force Base, OU 2, Spill Sites 2, 3, and 10, OH	9/30/97
6	Arkwood, AR	9/28/90
6	Brio Refining, TX	3/31/88
6	Dutchtown Treatment, LA	6/20/94
6	Fourth Street Abandoned Refinery, OK	9/30/93
6	French, Limited, TX	3/24/88
6	Gulf Coast Vacuum Services (OU1), LA	9/30/92
6	Hardage/Criner (Amendment), OK	11/22/89
6	Koppers (Texarkana Plant) Amendment, TX	3/4/92
6	Koppers (Texarkana Plant), TX	9/23/88
6	Monroe Auto Pit (Finsch Road Landfill), AR	9/26/96
6	Mosley Road Sanitary Landfill, OK	6/29/92
6	PETRO-CHEMICAL SYSTEMS, (TURTLE BAYOU) OU2, TX	4/30/98
6	Sheridan Disposal Services, TX	9/27/89
6	Sikes Disposal Pit, TX	9/18/86
6	SOUTH 8TH STREET LANDFILL OUS 1 & 2, AR	7/22/98
6	United Creosoting, TX	9/30/86
7	Bee Cee MFG, MO	9/30/97
7	Cleburn Stree Well, NE	6/7/96
7	Farmers Mutual Cooperative, IA	9/29/92
7	Ogallala Ground Water Contamination OU 1, NE	4/23/99
7	Quality Plating , MO	9/28/99
7	Ralston, IA	9/30/99
8	ANACONDA CO. SMELTER OU4, MT	9/29/98
8	Denver Radium (OU8), CO	1/28/92
8	HILL AIR FORCE BASE OU1, UT	9/29/98
8	Hill Air Force Base, OU 6, UT	9/30/97
8	MURRAY SMELTER, UT	4/1/98
8	Mystery Bridge at Highway 20, WY	9/24/90
8	PORTLAND CEMENT (KILN DUST 2 & 3) OU3, UT	8/17/98
8	Rocky Mountain Arsenal Offpost OU, CO	12/19/95
8	Rocky Mountain Arsenal Onpost, OU, CO	6/11/96
8	SMELTERTOWN SITE OU2, CO	6/4/98

Superfund Remedial Actions:

RODs Selecting Natural Attenuation (continued)

Region	Site Name, State	ROD Date
8	Utah Power & Light/American Barrel, UT	7/7/93
9	ANDERSEN AIR FORCE BASE OU3, GU	6/16/98
9	Camp Pendelton Marine Coprs base, OU 1, Site 9-41, Area, CA	12/7/95
9	George Air force Base OU 3, CA	10/5/98
9	INDIAN BEND WASH AREA OU3, AZ	9/30/98
9	Operating Industries, Inc. Landfill, CA	9/30/96
9	TRAVIS AIR FORCE BASE OU1, CA	12/3/97
9	Travis Air Force Base West/Annexes/Basewide OU (WABOU), CA	3/16/99
10	Eielson Air Force Base (OU6), AK	9/27/94
10	EIELSON AIR FORCE BASE OUS 3,4,5, AK	9/29/98
10	Elmendorf AFB, OU 4, AK	9/26/95
10	Elmendorf AFB, OU 5, AK	12/28/94
10	Fairchild AFB, Priority 2 sites, AK	12/20/95
10	Fort Richardson, OU A & B, AK	9/15/97
10	Fort Wainwright, OU 1, AK	6/27/97
10	Fort Wainwright, OU 2, AK	3/27/97
10	Fort Wainwright, OU 3, AK	4/9/96
10	Fort Wainwright, OU 4, AK	9/24/96
10	Hanford 1100-Area (DOE), WA	9/24/93
10	Monsanto Chemical Company, ID	4/30/97
10	Naval Air Station, Whidbey Isalnd - Ault Field, OU 5 Areas 1, 52 and 31, WA	7/10/96
10	NAVAL UNDERSEA WARFARE STATION (4 AREAS) OU1, WA	9/28/98
10	Wycoff/Eagle Harbor, West Harbor OU, WA	12/8/95

Appendix F

Identification of Remedy and Record of Decision Types for Superfund Remedial Actions

F.1 BACKGROUND

On December 11, 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which is known as the "Superfund" act. The act created the Superfund program, which was established to clean up abandoned hazardous waste sites around the United States. Section 105(a)(8)(B) of CERCLA, as amended, requires that EPA prepare a list of national priorities among the known sites throughout the United States at which releases or threatened releases of hazardous substances, pollutants, or contaminants may occur. This list is known as the National Priorities List (NPL).

The remedies selected for an NPL site are documented in a record of decision (ROD). Remedies implemented at NPL sites in accordance with RODs are known as Superfund remedial actions, and such sites are known as Superfund remedial action sites.

Selected remedies vary in the type of media addressed and the methods used to address those media. Classifying remedies into types can facilitate the transfer of experience and technology by making it easier to identify sites at which similar remedies are applicable. In addition, identifying remedy types can streamline the collection of the data needed to track the progress of the remediation of sites on the NPL and to identify trends in site remediation.

Because of the variety of media, contaminants, and potential remedies, confusion can arise when assigning a type to a particular remedy. Establishing and applying a comprehensive methodology for identifying remedy types can reduce potential confusion about remedy types and lead to more consistent data collection and reporting, thereby assisting in the transfer of experience and technology among similar sites.

This appendix describes the approach used to identify remedy and ROD types used in the document *Treatment Technologies for Site Cleanup: Annual Status Report (Tenth Edition)* (ASR). The methodology presented here is intended to provide a consistent and comprehensive approach to identifying remedy types, and, based on those remedy types, identifying ROD types. This approach can assist in the transfer of experience and technology among Superfund sites by helping remedial project managers (RPMs), On-Scene Coordinators (OSCs), and other regulatory and remediation professionals identify sites implementing similar remedies.

Remedy and ROD types are determined by reviewing the remedies selected in RODs. Although RODs are written using an overall format that is consistent, RODs are prepared by individual RPMs and other staff of the 10 EPA regions. In addition, the management practices and techniques used to remediate sites have evolved over time and continue to evolve. Therefore, the words, phrases, and descriptions applied to the same or similar remedies may differ from ROD to ROD. To facilitate the identification of remedy types, this appendix includes both descriptive definitions of remedy types and lists of key words and phrases that may be used to refer to each remedy type.

The definitions of remedy types provided in this appendix were based on a review of definitions and lists of media, remedies, and technologies provided in the following resources:

- The CERCLA Information System (CERCLIS 3) database
- ROD Annual Reports for fiscal years (FY) 1989 through 1995
- The Federal Remediation Technologies Roundtable (FRTR) Technology Screening Matrix
- The ASR

The remedy type definitions were reviewed and augmented by a working group of personnel of the U.S. Environmental Protection Agency (EPA) Technology Innovation Office (TIO) and Office of Emergency and Remedial Response (OERR) who are experienced in site remediation and ROD preparation and review.

This appendix includes remedy types and technologies that are not discussed in the ASR. The ASR focuses on source control treatments and in situ groundwater treatments. Additional remedy and technology types are described in this appendix so that it may be used for purposes beyond the limited scope of the ASR.

F.2 IDENTIFICATION OF REMEDY AND ROD TYPES

This appendix describes the methodology used to classify remedies selected at Superfund remedial action sites into specific types. Remedy types were identified by first dividing remedies into three categories (source control, groundwater, and no action) based on the media treated and the type of

action. Within each of these categories, the remedies were then further divided into the following 12 specific remedy types:

Source Control Remedies:

1. Source control treatment
2. Source control containment
3. Source control other
4. Source control monitored natural attenuation

Groundwater Remedies:

5. Groundwater in situ treatment
6. Groundwater pump and treat
7. Groundwater containment
8. Groundwater other
9. Groundwater monitored natural attenuation
10. Groundwater extraction
11. Groundwater discharge

No Action Remedies:

12. No action or no further action (NA/NFA)

Each ROD may select multiple remedy types. When multiple remedy types are selected in a single ROD, the overall ROD type is the one that appears first in the list above.

The definitions used to identify each remedy type are provided in the "Definitions" section below. When definitions include specific technologies and those technologies commonly are referred to by more than one word or phrase, the most commonly used word or phrase is listed first, followed by synonyms in parentheses.

F.3 DEFINITIONS USED TO IDENTIFY REMEDY TYPES

Definitions used to identify remedy types are presented below. The definitions of treatment technology and the different types of treatment technologies (physical, chemical, thermal, and bioremediation treatment) apply to both source control and groundwater remedies. Because these definitions apply to both source control and groundwater remedies, they are presented once here rather than being duplicated everywhere they apply.

Treatment Technology - Any unit operation or series of unit operations that alters the composition of a hazardous substance or pollutant or contaminant through chemical, biological, or physical means so as to reduce toxicity, mobility, or volume of the contaminated materials being treated. Treatment technologies are an alternative to land disposal of hazardous wastes without treatment. (Federal Register, volume 55, page 8819, 40 CFR 300.5: Definitions). Treatment technologies are grouped into five categories. The definitions for four of the categories (physical treatment, chemical treatment, thermal treatment, and biological treatment) are based on definitions provided in the FRTR Technology Screening Matrix. The fifth category, other or unspecified treatment, includes those technologies that do not fit into the first four categories. The five treatment technology categories are:

Physical Treatment - Uses the physical properties of the contaminants or the contaminated medium to separate or contain the contamination.

Chemical Treatment - Chemically converts hazardous contaminants to non-hazardous or less toxic compounds or compounds that are more stable, less mobile, and/or inert.

Thermal Treatment - Uses heat to: separate contaminants from contaminated media by increasing their volatility; destroy contaminants or contaminated media by burning, decomposing, or detonating the contaminants or the contaminated media; or immobilize contaminants by melting the contaminated media.

Bioremediation Treatment - Stimulates the growth of microorganisms which metabolize contaminants or create conditions under which contaminants will chemically convert to non-hazardous or less toxic compounds or compounds that are more stable, less mobile, and/or inert.

Other or Unspecified Treatment - Treatment that cannot be classified as physical treatment, chemical treatment, thermal treatment, or bioremediation treatment.

F.3.1 Source Control

Source control remedy - any removal, treatment, containment, or management of any contaminant source or contaminated medium other than groundwater.

Source Media - "Source material is defined as material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir [either stationary or mobile] for migration of contamination to the groundwater, to surface water, to air, [or to other environmental media] or act as a source for direct exposure. Contaminated ground water generally is not

considered to be a source material although non-aqueous phase liquids (NAPLS [occurring either as residual- or free-phase]) may be viewed as source materials." (*A Guide to Principal Threat and Low Level Threat Wastes*, Superfund publication 9355.3-02FS, USEPA OERR 1991). Source media include soil, sediment, sludge, debris, solid-matrix wastes, surface water, non-aqueous phase liquids (NAPLS), equipment, drums, storage tanks, leachate, landfill gas, and any other contaminated media other than groundwater that can act as a potential source of contamination.

1. Source Control Treatment

Any process meant to separate, destroy, or bind contaminants in a source medium. Key words used in RODs to identify these processes are listed below. More detailed descriptions of most of the technologies can be found in the ASR or at *http://www.frtr.gov*.

Physical Treatment

- Acid extraction
- Air sparging
- Air stripping
- Carbon adsorption (liquid-phase carbon adsorption)
- Clarification
- Decontamination
- Dewatering
- Dual-phase extraction
- Electrical separation (electrokinetic separation)
- Evaporation
- Filtration
- Flocculation
- Flushing (soil flushing and surfactant flushing)
- Ion exchange
- Magnetic separation
- Oil-water separation
- Physical separation (component separation and materials handling)
- Reverse osmosis (membrane separation)
- Soil flushing (in situ flushing and surfactant flushing)
- Soil vapor extraction (vacuum extraction and vapor extraction)
- Soil washing
- Solidification/stabilization (asphalt batching, immobilization, and microencapsulation)
- Solid-phase extraction
- Solvent extraction (chemical stripping)
- Super-critical fluid extraction
- Volatilization (aeration, mechanical soil aeration, and tilling)

Chemical Treatment

- Chemical treatment
- Chemical oxidation (cyanide oxidation, oxidation, and peroxidation)
- Chemical reduction (reduction)
- Dehalogenation (dechlorination)
- Neutralization
- Metals precipitation
- Ultraviolet (UV) oxidation

Thermal Treatment

- Flaring
- Gas flaring
- High energy corona
- Open burning
- Open detonation
- Plasma high-temperature recovery (fuming gasification and high-temperature metals recovery)
- Thermal desorption
- Thermal destruction (incineration and pyrolysis)
- Thermally enhanced recovery (conductive heating, Contained Recovery of Oily Wastes [CROW®], dynamic underground stripping, electrical resistance heating, hot air injection, in situ thermal desorption, microwave heating, radio frequency heating, and steam injection)
- Thermal treatment
- Vitrification (slagging)

1. Source Control Treatment (continued)

Bioremediation

- Aeration
- Bioremediation
- Biological treatment
- Bioreactor
- Bioventing
- Biopile
- Composting
- Controlled solid phase
- Fixed film
- Landfarming
- Nitrate enhancement
- Nutrient injection
- Oxidation enhancement with air sparging
- Oxidation enhancement with hydrogen peroxide (H_2O_2)
- Slurry-phase bioremediation (bioslurry, activated sludge)
- White rot fungus

Other or Unspecified Treatment

- Air emission treatment
- Gas collection and treatment (off-gas treatment)
- Hot gas decontamination
- Leachate treatment
- Physical-chemical treatment
- Phytoremediation
- Recycling
- Surface water treatment

2. Source Control Containment

Any process or structure designed to prevent contaminants from migrating from a source media into groundwater, to surface water, to air, (or to other environmental media) or acting as a source for direct exposure.

Key words used in RODs to identify source control containment remedies are listed below:

Capping and Cover

- Cap
- Cover material
- Evapotranspiration cover
- Revegetation

Bottom Liner

- Liner
- Clay
- Geosynthetic material

Drainage and Erosion Control

- Engineering control
- Hydraulic control
- Impermeable barrier
- Subsurface drain
- Surface water control (dike, berm, drainage controls, drainage ditch, erosion control, flood protection, and levee)
- Water table adjustment

On-Site Landfilling

- On-site consolidation
- On-site landfilling
- On-site disposal

Off-Site Landfilling

- Off-site consolidation
- Off-site landfilling
- Off-site disposal

Vertical Engineered Barrier

(Must apply to source medium. A vertical subsurface engineered barrier used to control or contain groundwater is not source control containment.)

- Grout (grout curtain)
- Impermeable barrier
- Sheet piling
- Slurry wall
- Subsurface barrier
- Vertical barrier

Other or Unspecified Containment

- Containment (consolidation, disposal, landfilling, and removal)
- Encapsulation
- Leachate control (leachate collection)
- Overpacking
- Permanent storage
- Repair (pipe repair, sewer repair, and tank repair)

3. Source Control Other

Source control other than treatment or containment.

Institutional Control

- Access restriction
- Deed restriction
- Drilling restriction
- Fishing restriction
- Guard (security)
- Institutional control
- Land use restriction
- Recreational restriction
- Swimming restriction

Engineering Control

- Engineering control
- Fencing
- Wetland replacement

Source Monitoring

- Monitoring
- Sampling

Population Relocation

- Population relocation

4. Source Control Monitored Natural Attenuation (MNA)

The reliance on natural attenuation processes (within the context of a carefully controlled and monitored approach to site cleanup) to achieve site-specific remediation objectives within a time frame that is reasonable, compared with that offered by other, more active methods. The "natural attenuation processes" that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. These in situ processes include biodegradation; dispersion; dilution; sorption; volatilization; radioactive decay; and chemical or biological stabilization, transformation, or destruction of contaminants (*Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*, USEPA, Office of Solid Waste and Emergency Response, Directive Number 9200.4-17P, 1999).

A remedy is considered source control MNA if it includes "natural attenuation" or "monitored natural attenuation" for a source (e.g., contaminated soil)

F.3.2 Groundwater Remedies

Groundwater Remedy - Management of groundwater. Groundwater remedies can include in situ treatment, pump and treat, containment using vertical engineered barriers, MNA, and other measures to address groundwater.

Groundwater Media - One or more aquifers beneath or proximal to a source of contamination contaminated by migration of a contaminant, such as leachate, or by other sources.

5. Groundwater In Situ Treatment

Treatment of groundwater without extracting it from the ground. Key words used in RODs to identify groundwater in situ treatment remedies are listed below:

Physical Treatment

- Air sparging
- Dual-phase extraction
- Free product recovery
- In-well air stripping (well aeration and air stripping)
- Vapor extraction

Chemical Treatment

- Chemical oxidation (oxidation and peroxidation)
- Chemical reduction
- Chemical treatment
- Dechlorination
- Permeable reactive barrier (chemical reactive barrier, chemical reactive wall, and passive treatment wall)

5. Groundwater In Situ Treatment (continued)

Thermal Treatment

Thermally enhanced recovery (conductive heating, CROW®, dynamic underground stripping, electrical resistance heating, hot air injection, hot water or steam flushing and stripping, in-situ thermal desorption, microwave heating, radio frequency heating, and steam injection)

Bioremediation

- Aeration
- Biological treatment
- Bioremediation
- Biosparging
- Bioslurping
- Bioventing
- Co-metabolic treatment
- Oxygen enhancement with air sparging
- Oxygen enhancement with H_2O_2
- Nitrate enhancement
- Nutrient injection

Other or Unspecified Treatment

- Physical/chemical treatment
- Phytoremediation

6. Groundwater Pump and Treat

Extraction of groundwater from an aquifer followed by treatment above ground. Key words used in RODs to identify groundwater pump and treat remedies are listed below:

Physical Treatment

- Aeration (air stripping)
- Carbon adsorption
- Clarification (sedimentation)
- Coagulation
- Component separation
- Equalization
- Evaporation
- Filtration
- Flocculation
- Ion exchange
- Oil/water separation
- Metals precipitation
- Reverse osmosis (microfiltration and ultrafiltration)
- Vapor extraction

Chemical Treatment

- Chemical reduction
- Chemical oxidation (oxidation, cyanide oxidation, and peroxidation)
- Neutralization
- Ultraviolet (UV) oxidation

Biological Treatment

- Biological treatment
- Bioreactors
- Fixed film
- Oxygen enhancement with H_2O_2

Other or Unspecified Treatment

- Pump and treat
- Physical/chemical treatment

7. Groundwater Containment

Containment of groundwater, typically through the use of vertical engineered barriers. Key words used in RODs to identify groundwater containment remedies are listed below:

Vertical Engineered Barrier

- Deep soil mixing
- Geosynthetic wall
- Grout (grout curtain)
- High-density polyethylene (HDPE) wall
- Impermeable barrier
- Sheet pile
- Slurry wall
- Subsurface vertical engineered barrier (subsurface barrier, subsurface vertical barrier)

Other or Unspecified Containment

- Plume containment

8. Groundwater Other

Groundwater remedies that do not fall into the categories Groundwater In Situ Treatment, Groundwater Pump and Treat, Groundwater Containment, or Groundwater Monitored Natural Attenuation, including:

Institutional Control

- Deed restriction
- Drilling restriction
- Institutional control
- Water supply use restriction

Engineering Control

- Extended piping
- Engineering control

Groundwater Monitoring

- Monitoring
- Sampling

Water Supply Remedies

- Alternate water supply (alternate drinking water and bottled water)
- Carbon at tap
- Seal well (close well)
- Treat at use location
- Well-head treatment

9. Groundwater MNA

The reliance on natural attenuation processes (within the context of a carefully controlled and monitored approach to site cleanup) to achieve site-specific remediation objectives within a time frame that is reasonable, compared with that offered by other, more active methods. The "natural attenuation processes" that are at work in such a remediation approach include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater. These in situ processes include biodegradation; dispersion; dilution; sorption; volatilization; radioactive decay; and chemical or biological stabilization, transformation, or destruction of contaminants (*Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites*, USEPA, Office of Solid Waste and Emergency Response, Directive Number 9200.4-17P, 1999).

A remedy is considered groundwater MNA if it includes "natural attenuation" or "monitored natural attenuation" of groundwater.

10. Groundwater Extraction

The process of removing groundwater from beneath the ground surface, including the following methods of groundwater extraction:

- Directional well (horizontal well)
- Pumping (vertical well)
- Recovery trench (horizontal drain)

11. Groundwater Discharge and Management

A method of discharging or otherwise managing extracted groundwater, including the following discharge methods and receptors:

- Centralized waste treatment facility
- Deep well injection
- Publicly owned treatment works (POTW)
- Recycling
- Reuse as drinking water
- Reuse as irrigation water
- Reuse as process water
- Surface drain reinjection
- Surface water discharge [National Pollutant Discharge Elimination System (NPDES) discharge]
- Vertical well reinjection

F.3.3 No Action Remedies

12. NA/NFA

The designation used for remedies that indicate no action or no further action will be taken. When determining overall ROD type, the designation is used only for RODs under which NA/NFA is the only remedy selected. If a ROD selects NA/NFA for only part of a site and another remedy for another part of a site, the ROD is given the classification corresponding to that selected remedy and is not given an NA/NFA designation.

F.4 SPECIAL CASES

This subsection provides a list of some special cases and descriptions of how remedy and ROD types should be assigned in those cases:

Decontamination:

- Decontamination of buildings, equipment, tanks, debris, boulders, rocks, or other objects is considered source control treatment. For example, abrasive blasting or scarifying a concrete pad to remove the contaminated surface layer of the pad would be considered source control treatment.
- Decontamination of equipment used to clean up a Superfund site is a normal activity that occurs at many Superfund sites and is not considered a remedy. For example, high-pressure water washing of a front end loader used to excavate contaminated soil would not be considered a remedy and would not be given a remedy type.

Phytoremediation:

- Phytoremediation involves the use of macroscopic plants to destroy, remove, immobilize, or otherwise treat contaminants. The process does not use microorganisms. Processes that use microorganisms are bioremediation.
- The use of plants to control water drainage at a site is not phytoremediation, but is an engineering control (source control other or groundwater other).

Conditional Remedies - If a ROD indicates that a certain remedy will be implemented under specific conditions, the ROD is considered to have selected the conditional remedy. For example, a ROD may specify that, if soils exceed a certain levels of contamination, they will be incinerated, but, if they do not exceed that level, no further action will be taken. In such a case, the ROD is considered to have selected incineration and therefore would be considered a source control treatment ROD.

Vertical Engineered Barriers - Some of the technologies used for vertical engineered barriers are also used to control surface water and surface drainage (for example, slurry walls and sheet piles). The selected remedy should be analyzed carefully to determine whether the containment is source control or groundwater containment.

Solidification/Stabilization - Some of the technologies used for solidification/stabilization are used for containment, as well. For example, encapsulation could mean placing a waste in plastic drums, an approach that would be classified as source control containment. Encapsulation of a waste by mixing it with a monomer and then causing the mixture to polymerize, resulting in microencapsulation, would be classified as source control treatment (solidification/stabilization). In general, containment involves isolating bulk wastes, while solidification/stabilization involves incorporating the waste into a medium so that the leachability of the contaminants is reduced. The selected remedy should be analyzed carefully to determine whether it is a containment or a treatment process.