

APPENDIX A:

**Interim Response Action
(IRA)
Descriptions**

February 2004

Appendix A - Interim Response Action (IRA) Descriptions

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APPENDIX A IRA DESCRIPTIONS

1.0 GROUNDWATER INTERCEPT AND TREATMENT SYSTEM NORTH OF ROCKY MOUNTAIN ARSENAL

This IRA was undertaken to address groundwater contamination that had migrated off post prior to installation of the North Boundary containment and treatment systems on post. A groundwater extraction and treatment system is now in place north of RMA for treatment of diisopropylmethylphosphonate (DIMP), solvents, and pesticides. This groundwater intercept and treatment system includes one extraction and reinjection system located along Highway 2 between 96th Avenue and 104th Avenue and another near 108th Avenue and Peoria. The extracted water is treated by granular activated carbon (GAC) to Containment System Remediation Goals (CSRGs) for organics at a treatment plant located on Peoria. The Decision Document for this IRA was finalized in July 1989. The design for this IRA was completed and finalized in January 1991. Construction of this IRA was completed in 1993; treatment of groundwater at this system is ongoing.

2.0 IMPROVEMENT OF THE NORTH BOUNDARY SYSTEM AND EVALUATION OF ALL EXISTING BOUNDARY SYSTEMS

The North Boundary Containment System (NBCS) was originally designed to remove and treat contaminated groundwater reaching the north boundary. Groundwater is extracted, treated by GAC, and reinjected into the ground. The primary contaminants at this location are chloroform, dieldrin, DIMP, DCPD, and organosulfur compounds. The original system consisted of extraction wells, a 6,740-ft slurry wall, a recharge sump, filters to remove particles from water, three large (20,000 lb.) carbon adsorbers to treat organic contaminants to CSRGs from groundwater, and reinjection wells. Groundwater is treated at a rate of 200 to 250 gpm. The IRA for the NBCS consisted of operational improvements and improvements to the reinjection system for treated water through the addition of recharge trenches along the entire portion of the slurry wall. The Decision Document for the installation of recharge trenches along the western half of the slurry wall was finalized in July 1988. The design was completed that same month, and installation was completed in December 1988. The Decision Document for the installation of treatment process improvements and recharge trenches along the eastern half of the slurry wall was finalized in April 1989. The design of the eastern recharge trenches was finalized in November 1989, with the design of the treatment process improvements finalized in January 1990. Completion of all the improvements to the NBCS was accomplished by December 1990; treatment of groundwater at this system is ongoing.

The Northwest Boundary Containment System (NWBCS) was designed to remove and treat contaminated groundwater migrating toward the northwest boundary. The original system included an extraction system, GAC treatment, and a reinjection system as well as a slurry wall to control contaminant migration. The NWBCS was improved under this IRA in two separate phases; the Short-Term Improvements and the Long-Term Improvements. Under the Short-Term

Improvements portion of this IRA, the slurry wall, which originally measured 1,425 ft, was extended by 665 ft on the northeast end, and five extraction wells and four reinjection wells were added to the southwest end of the system. The Short-Term Improvements increased the amount of water treated in the NWBCS from approximately 625 to 975 gpm. The Long-Term Improvements portion of this IRA involved the addition of seven monitoring wells, one extraction well, and an expansion of the monitoring program for the system. Groundwater is treated to CSRGs for organic contaminants. The Decision Document for the Short-Term Improvements was finalized in June 1990. All Short-Term Improvements design work was completed by March 1991. Installation of the Short-Term Improvements was completed in November 1991. The Decision Document for the Long-Term Improvements was finalized in October 1991. The Long-Term Improvements to the NWBCS were completed by July 1993. Treatment of groundwater at this system is ongoing.

The Irondale Containment System (ICS) was designed to remove and treat contaminated groundwater migrating toward the western boundary. The original system included two parallel rows of extraction wells, one row of reinjection (recharge) wells, and GAC treatment. This system was designed to treat a DBCP plume migrating from the Rail Yard. The system was improved during the Rail Yard portion of the Remediation of Other Contamination Sources IRA by installing extraction wells approximately 2,000 ft upstream from the original system, adding new recharge wells adjacent to the original system, and converting some of the original extraction wells to recharge wells. Groundwater is treated to CSRGs for organic contaminants. Construction of the improvements was completed in July 1991.

3.0 GROUNDWATER INTERCEPT AND TREATMENT SYSTEM NORTH OF BASIN F

The purpose of this IRA was to intercept and remove contaminated groundwater migrating from the Basin F area toward the northern boundary. The IRA involves extraction, treatment to CSRGs, and reinjection of groundwater. Water is extracted from a well north of Basin F at a rate of 1 to 4 gpm. The extracted groundwater is piped to the Basin A Neck System (BANS) for removal of volatile contaminants (solvents) by air stripping, and the remaining contaminants, such as pesticides, by GAC. Treated water is reinjected in recharge trenches at the Basin A Neck area. The Decision Document for this IRA was finalized in December 1988. The design was finalized in August 1989, with the construction being completed in September 1990; treatment of groundwater at this system is ongoing.

4.0 CLOSURE OF ABANDONED WELLS AT ROCKY MOUNTAIN ARSENAL

This IRA consisted of locating and closing old or deteriorating farm wells and unused on-post wells at numerous locations throughout RMA. The Decision Document for this IRA was finalized in June 1988. The IRA was completed in 1990.

5.0 GROUNDWATER INTERCEPT AND TREATMENT SYSTEM IN THE BASIN A NECK AREA

The BANS was designed to capture and contain contaminated groundwater migrating from the Basin A area. The IRA consists of extraction wells for removal of groundwater from the aquifer, a slurry wall to minimize migration of contaminated groundwater, a treatment system, and a reinjection system consisting of several recharge trenches. Approximately 12 to 20 gpm of groundwater are extracted and treated to CSRGs by GAC at the BANS. The contaminants removed from the groundwater include solvents and pesticides. The Decision Document for this IRA was finalized in September 1988. The design was finalized in June 1989, with construction of the BANS completed in 1990; treatment of groundwater at this system is ongoing.

6.0 BASIN F LIQUIDS, SLUDGES, AND SOILS REMEDIATION

This IRA included transfer of the basin liquids and decontamination water into temporary storage tanks and a lined, covered surface impoundment (Pond A); excavation of 600,000 cubic yards of Basin F soil and placement into a 16-acre lined waste storage pile with a leachate collection system; and incineration of the stored liquids by Submerged Quench Incinerator (SQI). This IRA was completed in two separate phases. The Decision Document for the first phase of this IRA was finalized in January 1988. Excavation and containment of the sludges/soil in the wastepile was completed by May 1989. The Decision Document for the second phase of this IRA was finalized in May 1990. In January 1991, an Explanation of Significant Differences from the Decision Document was finalized. This change in the original Decision Document involved off-site treatment of the SQI scrubber brine rather than on-site spray drying. The design of the SQI system was completed in January 1992, with construction completed in October 1992. Check-out of the SQI system was completed in March 1993, and the SQI became operational in May 1993. The SQI was shut down in July 1995 following successful treatment of approximately 11 million gallons of Basin F liquids and decontamination water. Over 250,000 lbs. of copper was reclaimed during the off-site treatment of the SQI scrubber brine. The SQI, storage tanks, and pond were closed in accordance with a Colorado Department of Public Health and Environment (CDPHE) closure plan. The tank farm and pond areas were clean closed to specific closure performance standards for contaminants in the Basin F liquid. The SQI was demolished, and some of the process equipment was salvaged. All field and administrative closure activities were completed by May 1996.

7.0 BUILDING 1727 SUMP LIQUID

This IRA involved the treatment of accumulated liquid in the Building 1727 sump by activated alumina and GAC to remove contaminants that included arsenic and DIMP. The Decision Document for this IRA was finalized in December 1988, with the design completed by May 1989. This IRA eliminated any remaining threat of liquid release from the sump, and was completed in November 1989.

8.0 CLOSURE OF THE HYDRAZINE FACILITY

The Hydrazine Blending and Storage Facility (HBSF) was used as a depot to receive, blend, store, and distribute hydrazine fuels. This IRA involved the treatment of stored decontamination rinseate and the demolition and disposal of the facility structures. Decontamination rinseate stored at the facility was treated on post at the SQI facility, the structures demolished, and the debris removed. Uncontaminated materials at the site were salvaged for recycling and reuse, and contaminated materials were disposed at an off-post permitted hazardous waste landfill. The area encompassing the former facility was regraded and revegetated following demolition and debris removal. The Decision Document for this IRA was finalized in November 1988. The Decision Document was amended in August 1991 to change the treatment of the decontamination rinseate from UV/Ozone to incineration at the SQI. The Implementation Document for demolition and disposal of the facility structures was finalized in January 1991. The Implementation Document for transfer of the decontamination rinseate to the SQI facility was finalized in August 1991. All IRA activity was completed by September 1992.

9.0 FUGITIVE DUST CONTROL

This IRA consisted of the application of a dust suppressant in unvegetated areas of Basin A. Hydro-seeder trucks were used to spray a nontoxic, water-based dust suppressant. Unlike other IRAs, no Decision Document was required. The initial application was completed in August 1988. Subsequent reapplications were completed in May 1991, April 1993, and August 1994. No further applications are planned.

10.0 SANITARY SEWERS REMEDIATION

This IRA involved the plugging of selected sanitary sewer manholes to eliminate the transport of contaminated groundwater that may have entered the sewer system via cracks or loose connections. The Decision Document for this IRA was finalized in April 1989. The Implementation Document was completed in January 1990, with all IRA activities completed by September 1992.

11.0 ASBESTOS REMEDIATION

This IRA is part of the Army's ongoing survey of asbestos on post, including removal and disposal activities. The survey of and removal actions for friable asbestos from occupied buildings were completed in December 1989. The Asbestos IRA activities were completed in December 1997.

12.0 REMEDIATION OF OTHER CONTAMINATION SOURCES

Under this IRA, the following contamination sources have or are being minimized or eliminated:

Motor Pool - A groundwater extraction system was constructed to remove trichloroethylene

(TCE) in groundwater in the Motor Pool area. Because the low levels of TCE present in this water can be effectively treated by GAC, the water is piped to the ICS for treatment. The amount of water extracted from the Motor Pool area is approximately 100 gpm. A temporary soil vapor extraction (SVE) system was also constructed to draw vapors containing volatile contaminants from the soil. Extracted vapors are sent first to a separation tank to remove the water vapor and then to a treatment system where the volatile contaminants are treated. The temporary soil vapor extraction action was conducted at the Motor Pool area between July and December 1991 to remediate TCE-contaminated soil. Two vapor extraction wells and four clusters of soil gas monitoring wells were installed. The Decision Document for the Motor Pool was finalized in March 1990. The design of the temporary soil vapor extraction system was completed by November 1990. The design of the groundwater extraction system was completed as part of the Rail Yard design. Treatment of groundwater from the Motor Pool extraction system is ongoing.

Rail Yard - Action was conducted at this site to assess a potential DBCP problem in this area and introduce cleanup measures if necessary. It was decided that groundwater removal would be necessary, but that adequate treatment could be provided at the ICS at the western boundary of RMA. The Rail Yard IRA extraction system consists of a row of five wells that extract approximately 230 gpm of groundwater containing low levels of DBCP. The water is piped to the ICS where DBCP is removed by GAC. Two additional wells further down gradient act as a backup system. The Decision Document for the Rail Yard was finalized in March 1990. The design of the extraction system was completed in November 1990, with installation finishing by July 1991. Treatment of groundwater from the Rail Yard extraction system is ongoing.

Lime Settling Basins - A soil cover was constructed over the Lime Settling Basins area to isolate the basins from the ground surface and minimize the amount of rainwater seeping into the basins. The Decision Document for the Lime Settling Basins was finalized in March 1990. The design of the cap for the Lime Settling Basins was completed by November 1990. Due to unforeseen site conditions, the design of the cap was modified to a soil cover in February 1993. The construction of the soil cover was completed by September 1993.

South Tank Farm Plume - The South Tank Farm consisted of 11 tanks used for storage of alcohol, BCHPD bottoms, DCPD, D-D soil fumigant, and sulfuric acid. Benzene was also used or stored in this area. The South Tank Farm Plume, located between South Plants and the South Lakes area, consists of two separate groundwater plumes extending toward the lakes, one of which consists of light nonaqueous phase liquids (LNAPLs). The selected alternative for this site consisted of continued groundwater monitoring and maintenance of South Lakes levels so that no additional action would be necessary to keep the groundwater plumes from affecting the South Lakes. The Decision Document for the South Tank Farm Plume was finalized in May 1991. Monitoring activities began in June 1991, and continued until May 1994.

Although unrelated to the IRA, an SVE field demonstration was conducted in 1991. The SVE field demonstration included collection and analysis of soil, LNAPL, SVE off gas, and soil gas samples, and was designed for specific application to the South Tank Farm Plume. The resulting data were used to evaluate the performance, effectiveness and operating parameters for an SVE

system in the area of the plume. Based on the results of the demonstration, it would take more than 10 years for the SVE process to remove the majority of the mass of contaminants that would remain after LNAPL recovery was no longer feasible.

Army Trenches - Soil samples collected from representative trenches showed elevated concentrations of ICP metals and relatively low concentrations of arsenic, mercury, and many organic contaminants, including members of all the analyte groups except pesticide-related organophosphorous compounds and organonitrogen compounds. A large variety of tentatively identified compounds were also detected in the trench soil. High concentrations of some organic contaminants exist in groundwater in portions of this area. The selected alternative for this site consisted of continued groundwater monitoring in this area. The Decision Document for the Army Trenches was finalized in May 1990. The Implementation Document for the continued groundwater monitoring was completed in September 1990. Monitoring activities began in November 1990, and continued until August 1994.

Shell Trenches - Under this action, a slurry wall that surrounds the trench area was constructed to reduce the lateral movement of contaminants away from the trenches. In addition, a vegetative soil cover was placed over the trench area. The Decision Document for the Shell Trenches was finalized in May 1990. The slurry wall and vegetative cover design was completed by December 1990. Installation of the slurry wall and vegetative cover was completed in December 1991.

M-1 Basins - The M-1 Basins action was to consist of In Situ Vitrification. This innovative technology would result in the in place melting or glassifying of the M-1 Basin soils. The Decision Document for the M-1 Basins was finalized in March 1990. The design for the M-1 Basins was completed in December 1990, but this action was terminated in September 1993 prior to any field activities being performed.

13.0 PRETREATMENT OF COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA) LIQUID WASTES

The initial action was pretreatment of CERCLA liquid wastes, which primarily involved the treatment of decontamination water and wastewater from the RI/FS and other IRA activities. This IRA was later expanded to include identification, storage, and disposal of a variety of CERCLA wastes. The initial action and expanded elements are as follows:

Wastewater Treatment Plant - A wastewater treatment plant was constructed under this phase of the CERCLA IRA, to treat wastewater generated from laboratory operations, field sampling, decontamination, and other sources such as equipment washing. Multiple treatment technologies are used at the CERCLA Wastewater Treatment Plant including activated GAC, advanced oxidation using ultraviolet light, air stripping, chemical precipitation, and activated alumina adsorption. The Decision Document for the CERCLA Wastewater Treatment Plant was finalized in June 1990. The plant design was finished by January 1991, with construction completed in July 1992. It is expected that this facility will continue to be used for the treatment of similar wastewater streams during implementation of the ROD.

Waste Management - This element identified several on- and off- post disposal options to dispose of hazardous waste that has been or will be placed in storage areas at RMA and that has not been addressed under another action. Waste streams currently being managed include RI/FS wastes; IRA wastes; miscellaneous wastes from vehicles, grounds and building maintenance; and items found on post. The Decision Document for this element was finalized in January 1993. Implementation letters were prepared after February 1993 for each disposal action taken.

Polychlorinated Biphenyls (PCBs) - The purpose of this element was to inventory and sample PCB-contaminated equipment followed by disposal off-post. This element included characterization of spill sites (i.e., soil and structures) associated with PCB contamination, and is ongoing as required. The Decision Document for this element was finalized in September 1993. The Implementation Plan for this element was finalized in January 1995. PCB contamination not addressed in this element will be addressed as part of the final remedy.

Waste Storage - This element included the assessment of constructing an on-post facility for temporary management of solids that are bulk hazardous wastes. These wastes would have primarily consisted of contaminated soil and building debris. No Decision Document was prepared as the assessment resulted in a determination that construction of an on-post management facility was not required.

14.0 CHEMICAL PROCESS-RELATED ACTIVITIES

Agent-related, nonagent-related process equipment and piping, free standing tanks, and underground storage tanks located in North Plants and South Plants are being sampled, decontaminated, and dismantled under this IRA. Although much of the equipment in these areas has already been removed and recycled or disposed, process-related equipment not remediated as part of this IRA will be disposed in the new on-post hazardous waste landfill. The Decision Document for this IRA was finalized in August 1991. An explanation of significant differences was finalized in November 1992 to expand this IRA to nonagent-related equipment and piping. A Decision Document for the removal of underground storage tanks was finalized in September 1993. Removal and disposal of the underground storage tanks was completed in April 1996. Some process equipment and piping removal will continue as part of the final response action at RMA. Asbestos removal activities as required for equipment removal will also continue as part of the final response action at RMA.

In addition, two other response actions were undertaken at RMA: the closure of a 12,045 ft deep injection well and the construction of the Klein treatment plant. 165 million gallons of waste were disposed in the deep well. The well was closed in 1985. The Klein treatment plant (located in Section 33) was constructed in the mid-1980s to treat off-post groundwater to the west of RMA that was contaminated primarily by chlorinated solvents. (It was subsequently determined that this contamination originated primarily from non-RMA sources.)

Reports generated for these IRAs (Technical Plans, Alternatives, Assessment Reports, Decision Documents, Implementation Documents, and Operational Reports) can be accessed through the Joint Administrative Record Document Facility (JARDF).

TABLE A-1 SUMMARY OF PAST AND ONGOING RESPONSE ACTIONS

Response Action	Objective	Status/Completion
Interim Response Actions		
1. Groundwater Intercept and Treatment System North of RMA	Capture and treat contaminated groundwater plumes north of RMA.	Construction completed 1993; treatment is ongoing.
2. Improvement of the North Boundary System and Evaluation of all Existing Boundary Systems	Evaluate and improve, as necessary, the operation of the boundary containment and treatment systems.	Construction completed 1993; ongoing treatment/monitoring has been incorporated into the on- and off-post RODs.
3. Groundwater Intercept and Treatment System North of Basin F	Capture and treat contaminated groundwater north of the Basin F area closer to its source.	Construction completed 1990; treatment is ongoing.
4. Closure of Abandoned Wells at Rocky Mountain Arsenal	Identify, locate, examine and properly close old or unused wells at RMA to prevent vertical migration of contamination between aquifers.	Completed 1990.
5. Groundwater Intercept and Treatment System in the Basin A Neck Area	Capture and treat shallow contaminated groundwater from Basin A closer to the source area.	Construction completed 1990; treatment is ongoing.
6. Basin F Liquids, Sludges, and Soils Remediation	Construct wastepile and cap to minimize the potential for infiltration of contaminants to groundwater and the potential for volatile emissions; reduce the potential impact of Basin F on wildlife; incinerate Basin F liquids; close SQI system.	Containment of sludges/soil completed in 1989; incineration of liquids completed 1995; SQI closed 1996.
7. Building 1727 Sump Liquid	Treat contaminated liquid in the sump.	Completed 1989.
8. Closure of the Hydrazine Facility	Treat decontamination rinseate stored at this facility; demolish and dispose of the aboveground structures.	Completed 1992.
9. Fugitive Dust Control	Minimize the amount of windblown contaminated dust.	Application completed 1988; reapplications completed in 1991, 1993, and 1994.
10. Sanitary Sewers Remediation	Plug the RMA sanitary sewers to eliminate the transport of contaminated groundwater.	Completed 1992.
11. Asbestos Remediation	Remove and dispose of friable asbestos in RMA structures where any potential for human exposure exists.	Action was completed in Dec 97.
12. Remediation of Other Contamination Sources:	Minimize or eliminate releases from selected contamination sources.	Motor Pool and Rail Yard extraction systems are

<p>Motor Pool Area Rail Classification Yard Lime Settling Basins South Tank Farm Plume Army (Complex) Disposal Trenches Shell Section 36 Trenches M-1 Settling Basins</p>		<p>ongoing and have been incorporated into the on- and off-post RODs; Lime Settling Basins completed in 1993; South Tank Farm Plume completed in 1994; Army Trenches completed in 1994; Shell Trenches completed in 1991; M-1 Basins action terminated in 1993.</p>
<p>13. CERCLA Liquid Wastes: Wastewater Treatment System Waste Management Polychlorinated Biphenyls Waste Storage</p>	<p>Construct and operate a facility to treat wastewater resulting from response actions; identify disposal options for hazardous wastes; inventory, sample, and remediate PCB-contaminated structures and soil; analyze temporary management of bulk hazardous wastes.</p>	<p>Construction of treatment plant completed in 1992; liquid treatment and waste management is ongoing; PCB remediation is ongoing as part of ROD implementation; waste storage analysis completed.</p>
<p>14. Chemical Process-Related Activities: Agent Equipment and Tanks Nonagent Equipment and Tanks Underground Storage Tanks</p>	<p>Remove and dispose of contaminated process-related equipment from manufacturing areas.</p>	<p>Underground Storage Tanks completed in 1996. Phase I Chemical Process Equipment Removal (Exterior) completed Jan 98. Remaining actions are ongoing as part of ROD implementation.</p>
<p>Other Response Actions:</p> <p>1. Klein Water Treatment Plant</p> <p>2. Deep Disposal Well Closure</p>	<p>Construct and operate a facility to treat chlorinated-solvent contaminated groundwater extracted by SACWSD wells west of RMA.</p> <p>Properly seal and abandon deep injection well adjacent to Basin F.</p>	<p>Construction of treatment plant completed 1989; water treatment is ongoing.</p> <p>Completed in 1985.</p>

NOTE: Final summary reports for all IRAs are projected to be complete by October 2000.

TABLE A-2 STATUS OF INTERIM RESPONSE ACTION SUMMARY REPORTS

Report Number	ROD Table 2.4.1	Interim Response Action	Priority	Submitted to Army	Army 1 st Draft	EPA Review	State Review	Report Finalized	EPA Acceptance
1	1	Groundwater Intercept and Treatment System North of Rocky Mountain Arsenal	2	02/17/99	04/15/99	09/23/99	09/24/99	05/23/00	10/19/00
	2	Improvement of the North Boundary System and Evaluation of all Existing Boundary Systems:							
2		North Boundary System	2	02/24/99	07/01/99	09/23/99	09/24/99	05/23/00	10/19/00
3		Northwest Boundary Containment System	2	02/18/99	10/01/99			05/23/00	10/19/00
4		Irondale Containment System		10/01/97	10/01/97	10/01/97		10/31/97	10/19/00
5	3	Groundwater Intercept and Treatment System North of Basin F	2	02/25/99	10/01/99	12/02/99	12/02/99	05/23/00	10/19/00
6	4	Closure of Abandoned Wells at Rocky Mountain Arsenal	2	06/03/99	07/10/00		09/8/00	10/05/00	08/23/00
7	5	Groundwater Intercept and Treatment System in the Basin A Neck Area	2	02/26/99	10/01/99	12/02/99	12/02/99	05/23/00	10/19/00
	6	Basin F Liquids, Sludges, and Soils Remediation							
8		Element 1, Basin F Waste Pile	1	07/15/98	01/13/98	03/08/99	06/18/99	05/23/00	10/19/00
9		Element 2, Basin F Liquid	1	07/15/98	11/18/98	03/08/99	03/23/99	05/23/00	10/19/00
10	7	Building 1727 Sump Liquid	3	06/04/99	07/10/00			10/05/00	08/23/00
11	8	Closure of the Hydrazine Facility	3	06/07/99	07/16/99	09/23/99	09/09/99	05/23/00	10/19/00
12	9	Fugitive Dust Control	3	06/07/99	07/10/00			10/05/00	08/23/00
13	10	Sanitary Sewer Remediation	1	03/15/98	06/22/98	07/20/98		05/23/00	10/19/00
14	11	Asbestos Remediation	4	W/EPA	07/10/00	09/15/00		09/27/00	09/29/00
	12	Remediation of Other Contamination Sources							
15		Motor Pool Area		10/01/97	10/01/97	10/01/97		10/31/97	10/19/00
16		Rail Classification Yard		10/01/97	10/01/97	10/01/97		10/31/97	10/19/00
17		Lime Settling Basins	3	06/04/99	07/10/00			10/05/00	08/23/00
18		South Tank Farm Plume	2	03/03/99	07/16/99	09/23/99	09/09/99	08/22/00	10/19/00
19		Army (Complex) Disposal Trenches	1	03/15/98	06/03/98	07/10/98		05/23/00	10/19/00
20		Shell Section 36 Trenches	1	02/17/98	05/26/98	07/10/98		05/23/00	10/19/00
21		M-1 Settling Basins	3	06/04/99	07/16/99	09/23/99	09/09/99	05/23/00	10/19/00
	13	Pretreatment of Comprehensive Environmental Response, Compensation, and Liability Act Liquid Wastes:							
22		Wastewater Treatment System	2	06/03/99	07/10/00			10/05/00	08/23/00
23		Element One – Waste Management	3	06/04/99	07/10/00		09/08/00	10/05/00	08/23/00
24		Element Two – Polychlorinated Biphenyls	1	07/15/98	10/29/98	03/08/99		05/23/00	10/19/00
25		Element Three – Waste Storage	3	06/04/99	07/10/00			10/05/00	08/23/00
26	14	Chemical Process Related Activities	1	02/17/98	07/10/00			10/05/00	08/23/00
		Other Response Actions							
27		Klein Water Treatment Plant (OU-1 ROD)	3	06/16/99	07/16/99	09/23/99	09/09/99	05/23/00	10/19/00
28		Deep Disposal Well Closure	3	06/03/99	07/16/99	09/23/99	09/09/99	05/23/00	10/19/00