Natural attenuation – essentially the "no action" alternative. It is likely that natural attenuation will be part of the overall strategy for management of the contaminant plume (or plumes). In the event that no other approach is technically feasible, natural attenuation may be the only available alternative.

Institutional controls – would likely be used in conjunction with some other selected alternative, but would especially be utilized under the natural attenuation alternative. Institutional controls would include the limitation of any activity that could aggravate the groundwater issues at the site (for example, the discontinuation of the use of impoundments at the site to eliminate potential sources).

Isolation and containment – would include features such as interception or infiltration trenches, slurry or containment walls, pumping or injection wells. In general, these are approaches that address physical interruption or removal of the contaminant plume.

Groundwater treatment – would include in-situ and ex-situ approaches to treatment. Traditional pump and treat is an example of an ex-situ approach, where contaminated water is pumped from the well, conveyed to a treatment facility, and then directed to some ultimate location for disposal or reuse. In-situ treatment options would include technologies such as air sparging, physical or chemical oxidation, and chemical reduction. These groundwater treatment alternatives are approaches that address the actual reduction in concentration of the contaminants of concern.

The alternatives analysis will result in a report that describes and compares the attributes of the various alternatives considered. The attributes will include the description; technical feasibility; effectiveness; administrative feasibility; and capital, annual, and life cycle costs for each alternative considered. For comparison purposes, the attributes for each alternative are often presented in matrix fashion. The analysis of alternatives will result in the selection of an alternative that is the most cost effective and efficient means of addressing the treatment goals.

6.3 ANTICIPATED SCHEDULE FOR COMPLETION

Obviously, it will take some time to collect the information needed in the alternative analysis and to complete the alternatives analysis itself. There are three basic steps identified that are necessary to compete the alternative analysis and to proceed down the path of alternative selection and implementation. These steps include 1) development of a data collection work plan, 2) data collection and completion of necessary testing activities (i.e. bench testing), and 3) alternatives analysis and selection.

Work plan. The work plan will identify the type of data that will need to be collected, and the timing for the collection of the data. Appropriate methodologies for data collection will be identified where applicable. The work plan will also identify the kind of hydrologic testing that will occur at specified well locations. It is anticipated that the work plan will be completed within thirty days of TCEQ approval of this alternative analysis approach.

Data collection. This step will essentially involve the implementation of the work plan. It will include the collection of data and performance of the various tests proposed. Testing will include aquifer characteristic as well as treatability of alternatives identified. The collection of data and the testing phase will likely be completed within six to eight months of TCEQ acceptance of the work plan.

Alternatives analysis. This is the final stage in the proposed analysis. It will include the development of alternative descriptions, feasibility assessment, cost estimation, and comparison. The result will be presented in matrix format to allow a comparison of alternatives. A preferred alternative will be identified at this time as well. The analysis will be presented in a final report. The analysis will be completed within six to eight months after completion of the data collection phase.

6.0 GROUNDWATER ALTERNATIVE ANALYSIS

This Phase IV report has presented and discussed the results of additional monitoring of groundwater quality as proposed in the previously submitted Phase III Remedial Investigation Report. The results of this report support observations made in the past regarding the occurrence of contaminants of concern in the groundwater beneath the El Paso smelter. To summarize, there appear to be potential conduits for contaminants along the paths of the historical arroyos on site that have been backfilled with slag and smelter-related material. With the removal of source areas (i.e. the drying of Ponds 1, 5 and 6), and implementation of on-plant water controls, there is an indication that the concentration of contaminants is decreasing in the vicinity of the sources, and there is some increase in concentrations downgradient. The downgradient increases could be a result of contaminant plumes migrating down the arroyo pathways or historical spills that have not yet run their course.

Future efforts in groundwater investigation at the El Paso smelter will be focused on the analysis of potential for mitigation of waters with elevated groundwater contamination. In order to properly conduct a remedial feasibility analysis, additional information needs to be collected to more completely describe the system. The following sections discuss the information needs more specifically, and present a scope of work for the anticipated remedial alternatives analysis.

The additional investigation activities and alternative evaluations will be closely coordinated with the International Boundary and Water Commission (IBWC) canal restoration project. The IBWC has prepared a conceptual design for the project but construction dewatering parameters have not been defined. Asarco and the IBWC could have an opportunity to develop aquifer data that would be beneficial for the IBWC's design engineers and Asarco's groundwater team, and the construction project offers additional opportunity for potentially innovative mitigative approaches.

6.1 ADDITIONAL INVESTIGATIONS

Additional information is needed to describe the physical and chemical system of groundwater and contaminant occurrence at the El Paso smelter, and to allow an analysis of the most effective and efficient means of mitigating groundwater contaminants. In some cases the information needed will necessitate alteration in the methods of collecting data and in other cases will involve the collection of new information. Information needs are explained further below.

Site water balance. Information regarding water inputs, usage and outputs is needed for the site. This will allow the identification of potential water losses that could be sources that may exacerbate the occurrence and/or migration of contaminants in groundwater. Understanding of such sources could be critical in addressing the mitigation of groundwater contamination at the facility.

Water quality data. In addition to the routine quarterly monitoring of groundwater, additional water quality data will need to be collected from selected wells. These will include sufficient samples to allow speciation of contaminants, and collection of samples from discrete locations (i.e. depths) at selected wells. The data collected will allow further characterization of the plume and will enable better assessment of treatability options.

Aquifer characteristics. Additional information is needed to more completely describe the hydrologic properties of the aquifer. This information will allow for a better understanding of the flow regimes and potential interactions of the arroyos, alluvial aquifer and the river. In addition to enhancement in understanding of the nature of groundwater flow and contaminant transport in the underlying aquifer, this information is also necessary to assess the potential treatability and efficiency for various treatment alternatives.

Bench tests. Treatment technologies will need to be assessed for effectiveness on the groundwater contaminant concentrations at the site. This testing may be in-situ (i.e. in the well) or in the laboratory using samples taken from the wells. Ideally, wells will be targeted for testing based on the presence of contaminants at relatively high concentrations or at concentrations that optimize the various treatment options.

Following the collection of information described above, the data gathered will be evaluated during preparation and completion of an alternative analysis. The details of the conduct of the proposed alternative analysis are presented below.

6.2 ANALYSIS OF ALTERNATIVES

With the collection of the additional data, it will be possible to complete the analysis of treatment alternatives. As mentioned above, treatment feasibility depends on the physical nature of the contamination, the characteristics of the aquifer that will lead to effective containment or collection of contaminant plumes, and the species of contaminant that will be treated. With the above information in hand, it will be possible to proceed with the analysis and ultimate selection of a treatment alternative.

Bench testing will help to identify whether selected alternatives will be effective in treating or mitigating the groundwater contamination at the site. Once the feasibility is established, the remainder of the analysis will identify the capital costs for construction of the alternative, operation and maintenance costs during the operation, and costs related to the dismantling of any treatment apparatus. The life cycle costs for the alternatives would be evaluated against the relative treatment efficacy.

A preliminary list of potential alternatives and approaches is provided below. These alternatives will likely be evaluated during the analysis, and some other alternatives not presently contemplated may be included as well. The final list of alternatives may or may not include all of the approaches discussed below.

Natural attenuation – essentially the "no action" alternative. It is likely that natural attenuation will be part of the overall strategy for management of the contaminant plume (or plumes). In the event that no other approach is technically feasible, natural attenuation may be the only available alternative.

Institutional controls – would likely be used in conjunction with some other selected alternative, but would especially be utilized under the natural attenuation alternative. Institutional controls would include the limitation of any activity that could aggravate the groundwater issues at the site (for example, the discontinuation of the use of impoundments at the site to eliminate potential sources).

Isolation and containment – would include features such as interception or infiltration trenches, slurry or containment walls, pumping or injection wells. In general, these are approaches that address physical interruption or removal of the contaminant plume.

Groundwater treatment – would include in-situ and ex-situ approaches to treatment. Traditional pump and treat is an example of an ex-situ approach, where contaminated water is pumped from the well, conveyed to a treatment facility, and then directed to some ultimate location for disposal or reuse. In-situ treatment options would include technologies such as air sparging, physical or chemical oxidation, and chemical reduction. These groundwater treatment alternatives are approaches that address the actual reduction in concentration of the contaminants of concern.

The alternatives analysis will result in a report that describes and compares the attributes of the various alternatives considered. The attributes will include the description; technical feasibility; effectiveness; administrative feasibility; and capital, annual, and life cycle costs for each alternative considered. For comparison purposes, the attributes for each alternative are often presented in matrix fashion. The analysis of alternatives will result in the selection of an alternative that is the most cost effective and efficient means of addressing the treatment goals.

6.3 ANTICIPATED SCHEDULE FOR COMPLETION

Obviously, it will take some time to collect the information needed in the alternative analysis and to complete the alternatives analysis itself. There are three basic steps identified that are necessary to compete the alternative analysis and to proceed down the path of alternative selection and implementation. These steps include 1) development of a data collection work plan, 2) data collection and completion of necessary testing activities (i.e. bench testing), and 3) alternatives analysis and selection.

Work plan. The work plan will identify the type of data that will need to be collected, and the timing for the collection of the data. Appropriate methodologies for data collection will be identified where applicable. The work plan will also identify the kind of hydrologic testing that will occur at specified well locations. It is anticipated that the work plan will be completed within thirty days of TCEQ approval of this alternative analysis approach.

Data collection. This step will essentially involve the implementation of the work plan. It will include the collection of data and performance of the various tests proposed. Testing will include aquifer characteristic as well as treatability of alternatives identified. The collection of data and the testing phase will likely be completed within six to eight months of TCEQ acceptance of the work plan.

Alternatives analysis. This is the final stage in the proposed analysis. It will include the development of alternative descriptions, feasibility assessment, cost estimation, and comparison. The result will be presented in matrix format to allow a comparison of alternatives. A preferred alternative will be identified at this time as well. The analysis will be presented in a final report. The analysis will be completed within six to eight months after completion of the data collection phase.

7.0 SUMMARY AND CONCLUSIONS

7.1 LA CALAVERA SOILS

Results from samples collected by EPA and Asarco indicated lead and arsenic concentration in soil ranging from 13 mg/kg to 850 mg/kg and bldl to 760 mg/kg respectively. Speciation testing on soils indicated a high correlation between windblown slag particulate and soil contamination in the area. EPA determined, based on the speciation results, that soil contamination in the La Calavera soils were likely attributable to the slag crushing operations conducted by Oglebay Norton Materials, Inc.

7.2 SMELTERTOWN AND IBWC SOILS

Based upon the conclusions of Integrated Exposure Biokenetic (IBEK) modeling of soil analytical results from historic Smeltertown and the IBWC area, the Risk Based Exposure Limit (RBE) for lead in soil for these sites for commercial/industrial sites is 1,600 mg/kg. Results of 82 samples from the areas indicate lead concentrations ranging from 144 mg/kg to 2140 mg/kg.

7.3 OFF-SITE RESIDENTIAL SOILS

Asarco conducted independent sampling and analysis of soils in off-site areas targeted in EPA's emergency removal action. Results and speciation analysis suggest that primary human-caused sources in the soils include lead paint, slag particles, possible ore concentrates, perlite and slag-derived fertilizers. No evidence of stack emission particles was observed in any samples.

7.4 GROUNDWATER AND SURFACE WATER

Results of groundwater data analyses indicate identifiable trends in changes in spatial distribution of concentration of arsenic and selenium. Generally, concentrations in groundwater seem to be declining around source areas where surface water has been removed or diverted, and there appears to be an increase in concentrations moving down-

gradient through preferential flow paths. Based on these observations, additional investigation is recommended (See Section 8.0 RECOMMENDATIONS).

The Mesilla and Hueco Bolsons are the primary aquifers for sources of drinking water in the El Paso region. Based on available literature, there is no apparent hydrogeologic connection between the Mesilla and Hueco Bolsons and the Rio Grande River in proximity to the Asarco El Paso Plant site. Therefore, the potential for affected groundwater in the vicinity of the Asarco plant is minimal.

Additional information is needed to describe the physical and chemical system of groundwater and contaminant occurrence at the El Paso smelter, and to allow an analysis of the most effective and efficient means of mitigating groundwater contaminants. Information needs include:

- **Site water balance.** Information regarding water inputs, usage and outputs is needed for the site. This will allow the identification of potential water losses that could be sources that may exacerbate the occurrence and/or migration of contaminants in groundwater. Understanding of such sources could be critical in addressing the mitigation of groundwater contamination at the facility.

- **Water quality data.** In addition to the routine quarterly monitoring of groundwater, additional water quality data will need to be collected from selected wells. These will include sufficient samples to allow speciation of contaminants, and collection of samples from discrete locations (i.e. depths) at selected wells. The data collected will allow further characterization of the plume and will enable better assessment of treatability options.

- **Aquifer characteristics.** Additional information is needed to more completely describe the hydrologic properties of the aquifer. This information will allow for a better understanding of the flow regimes and potential interactions of the

arroyos, alluvial aquifer and the river. In addition to enhancement in understanding of the nature of groundwater flow and contaminant transport in the underlying aquifer, this information is also necessary to assess the potential treatability and efficiency for various treatment alternatives.

- **Bench tests.** Treatment technologies will need to be assessed for effectiveness on the groundwater contaminant concentrations at the site. This testing may be in-situ (i.e. in the well) or in the laboratory using samples taken from the wells. Ideally, wells will be targeted for testing based on the presence of contaminants at relatively high concentrations or at concentrations that optimize the various technologies.

8.0 REFERENCES

Dames & Moore, 1998. Storm Water Collection and Reuse, Project No. ELP96005, Contract Documents and Technical Specifications. Prepared for ASARCO Incorporated, El Paso, Texas Facility. July 31, 1998.

Drever, 1982. The Geochemistry of Natural Water, 3rd Edition, Prentice Hall.

El Paso Times, 2001. Tainted Arroyo Park Soil Poses No Health Threat, Agencies Say. October 4, 2001.

Fetter, C.W. 1994. Applied Hydrogeology. Merrill Publishing Company, Inc., Columbus, Ohio, p. 80.

Geraghty and Miller, Inc., 1995. Aqtesolv, Version 2.01. Geraghty and Miller, Inc., Reston, Virginia. February 1995.

Gibbons, R.D., 1994, *Statistical Methods for Groundwater Monitoring*, John Wiley & Sons, Inc., New York, 286 p.

Gilbert, R.O., 1987, *Statistical Methods for Environmental Pollution Monitoring*, Van Nostrand Reinhold, New York, 320 p.

Helsel, D.R., and R.M. Hirsch, 1992, *Statistical Methods in Water Resources*, Studies in Environmental Science 49, Elsevier, New York, 522 p.

Hydrometrics, 1990. Investigation of a Diesel Fuel Release from the Asarco Copper Smelter Facility, El Paso, Texas. Summary Report. April, 1990.

Hydrometrics, Inc., 1995b. Demonstration of the Baker Plow as a Remediation Tool for the ASARCO, Inc., East Field. December 1995.

Hydrometrics, Inc., 1996. Asarco El Paso Copper Smelter Remedial Investigation Work Plan, El Paso, Texas. Prepared for ASARCO Incorporated, El Paso, Texas. November 8, 1996.

Hydrometrics, 1997a. Preliminary Evaluation of Sediment Quality in Ponds 1, 5, and 6 and Recommendations for Future Action, Asarco El Paso Copper Smelter. Prepared for ASARCO Incorporated. April 22, 1997.

Hydrometrics, 1997b. Risk-Based Site Assessment for the Diesel No. 1 Site, Asarco El Paso Copper Smelter, El Paso, Texas. April 24, 1997.

Hydrometrics, 1998a. Asarco El Paso Copper Smelter Remedial Investigation Report, El Paso, Texas. October 1998.

Hydrometrics, 1998b. Diesel No. 1 Remediation Site (LSPT I.D. No. 94594) 1997 Annual Report. Prepared for ASARCO Incorporated, El Paso, Texas. March 24, 1998.

Hydrometrics and Brown McCarroll & Oaks Hartline, L.L.P., 2000. Area of Contamination at the ASARCO El Paso Copper Smelter, El Paso, Texas. May 2000.

Hydrometrics, 2000a. Asarco El Paso Copper Smelter Phase II Remedial Investigation Report, El Paso, Texas. July 2000.

Hydrometrics, 2000b. Technical Memorandum, Closed Plant Evaluation Plan, Copper Plant, Asarco El Paso Copper Smelter. October 2000.

Hydrometrics, 2000c. Technical Memorandum, Closed Plant Evaluation Plan, Lead and Sinter Plants, Asarco El Paso Copper Smelter. October 2000.

Hydrometrics, 2000d. Technical Memorandum, Closed Plant Evaluation Plan, Cadmium and Zinc Plants, Asarco El Paso Copper Smelter, October 2000.

Hydrometrics, 2000e. Technical Memorandum, Closed Plant Evaluation Plan, Antimony Plant, Asarco El Paso Copper Smelter, October 2000.

Hydrometrics, 2001. Remedial Design Report (RDR), Asarco El Paso Copper Smelter. November 2001.

Hydro-Search, 1985. Regional and Local Hydrogeology of the El Paso Facility. September 27, 1985.

International Boundary Water Commission, 1999. Personal communication and public data files, including information for the American Canal, including Earthwork and Gravel Surfacing at American Dam and Canal, General Plan, May 28, 1938. American Canal Detail Sections, September 21, 1936.

Jaco, Hubert B., 1971. Soil Survey, El Paso County, Texas. U.S. Department of Agriculture, Soil Conservation Service, November.

Lovejoy, Earl M.P. 1976a. Geology of Cerro de Cristo Rey Uplift, Chihuahua and New Mexico. New Mexico Bureau of Mines and Mineral Resources, Memoir 31. New Mexico Institute of Mining and Technology, Socorro, New Mexico.

Lovejoy, Earl M.P., 1976b. Neotectonics of the Southeast End of the Rio Grande Rift along the Mesilla Valley Fault Zone, and the Course of the Rio Grande, El Paso, Texas. Institute of Mining and Technology, Socorro, New Mexico.

Modrow, Doug, 1995. ASARCO, Incorporated, personal communication.

Sergent, Hauskins & Beckwith, 1984. Boring Locations and 1891 Contours, ASARCO, Inc., El Paso Facility. Prepared for ASARCO Incorporated.

Slichter, C.S., 1905. Observations of the Groundwaters of Rio Grande Valley. U.S. Geological Survey Water Supply and Irrigation Paper No. 141.

Texas Administrative Code, Title 30, Chapter 335, Subchapter S, Risk Reduction Standards.

Texas Natural Resource Conservation Commission, 1996. Agreed Order, Docket No. 96-0212-MLM-E, August 29, 1996.

Texas Natural Resource Conservation Commission, 1997. Correspondence entitled, Remedial Investigation Work Plan, ASARCO Inc., El Paso Facility, 2301 West Paisano, El Paso, Texas 79922, Solid Waste Registration No. 31235, Water Quality Permit No. WQ 0002321, EPA Identification No. TXD990757668. Addressed to ASARCO, Inc., El Paso, Texas. February 24, 1997.

Texas Natural Resource Conservation Commission, 1998. Consistency Report. July 1998.

Texas Natural Resource Conservation Commission, 1999. Correspondence entitled, Remedial Investigation Report, Agreed Order, TNRCC Industrial Solid Waste Registration No. 31235, EPA ID No. TXD990757668. Addressed to ASARCO, Inc., El Paso, Texas. June 25, 1999.

Texas Natural Resource Conservation Commission, 1999. Correspondence entitled, Remedial Investigation Report-Approval, Agreed Order, TNRCC Industrial Solid Waste Registration No. 31235, EPA ID No. TXD990757668. Addressed to ASARCO, Inc., El Paso, Texas. December 9, 1999.

Texas Natural Resource Conservation Commission, 1999. Correspondence entitled, Area of Contamination at the ASARCO El Paso Copper Smelter, Interim Corrective Action, Agreed Order Docket No. 96-0212-MLM-E, TNRCC Industrial Solid Waste Registration No. 31235, EPA ID No. TXD990757668. Addressed to ASARCO, Inc., El Paso, Texas. July 13, 2000.

Texas Natural Resource Conservation Commission, 1999. Correspondence entitled, Asarco's Area of Contamination (AOC) Proposal, Agreed Order Docket No. 96-

0212-MLM-E, TNRCC Industrial Solid Waste Registration No. 31235, EPA ID No. TXD990757668. Addressed to ASARCO, Inc., El Paso, Texas. December 22, 2000.

Texas Natural Resource Conservation Commission, 1999. Correspondence entitled, Asarco Closed Plan Evaluation, Agreed Order Docket No. 96-0212-MLM-E, TNRCC Industrial Solid Waste Registration No. 31235, EPA ID No. TXD990757668. Addressed to ASARCO, Inc., El Paso, Texas. January 18, 2001.

Texas Natural Resource Conservation Commission, 1999. Correspondence entitled, Comments to Asarco El Paso Smelter Phase II Remedial Investigation Report El Paso, Texas, Agreed Order Docket No. 96-0212-MLM-E, TNRCC Industrial Solid Waste Registration No. 31235, EPA ID No. TXD990757668. Addressed to ASARCO, Inc., El Paso, Texas. February 14, 2001.

Texas Natural Resource Conservation Commission, 1999. Correspondence entitled, Asarco Closed Plant Evaluation Extension Request, Agreed Order Docket No. 96-0212-MLM-E, TNRCC Industrial Solid Waste Registration No. 31235, EPA ID No. TXD990757668. Addressed to ASARCO, Inc., El Paso, Texas. March 13, 2001.

Texas Natural Resource Conservation Commission, 1999. Correspondence entitled, Asarco Closed Plant Evaluation - Extension Approval, TNRCC Industrial Solid Waste Registration No. 31235, EPA ID No. TXD990757668. Addressed to ASARCO, Inc., El Paso, Texas. July 10, 2001.

U.S. Environmental Protection Agency, 1992. Compilation of Current Practices at Land Disposal Facilities: Summary of Liner and Leak Detection Designs, Action Leakage Rates, Response Action Plans, and Management of Liquids in Landfills. EPA530-R-92-003, PB92-128 206, Washington, DC. January.

US EPA, 1994a. The Resource Conservation and Recovery Act (RCRA) Corrective Action Plan, Final, OSWER Directive 9902.3-2A, EPA530SW88028, May.

US EPA, 1994b. Guidance for the Data Quality Objectives Process. EPA QA/G-4, ORD, EPA600R96055.

US Geological Survey, 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States. Hansford T. Shacklette and Josephine G. Boerngen, US Geological Survey Professional Paper 1270.

Walker & Associates, 2001. Bio-Accessibility of Lead and Arsenic in Crushed Slag, El Paso, Texas. September 14, 2001.

Table 1-1
Summary of Facility RI Monitor Wells, Borings and Soil Samples
El Paso Asarco Copper Smelter, Phase IV Remedial Investigation

IA/ Description	Phase I		Phase II		Phase III		Phase IV		Total	
	Wells & Borings	Samples	Wells & Borings	Samples	Wells & Borings	Samples	Wells & Borings	Samples	Wells & Borings	Samples
IA-1	3	16	3	39	0	0	0	0	6	55
IA-2	12	44	7	37	8	37	0	0	27	118
IA-3	11	41	8	59	0	0	0	0	19	100
IA-4	30	121	11	66	0	0	0	0	41	187
IA-5	24	101	3	15	5	31	14	82	46	229
IA-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IA-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IA-8	34	138	9	146	8	44	0	0	51	328
IA-9	2	17	7	36	45	163	0	0	54	216
IA-10	9	34	1	7	0	0	0	0	10	41
IA-11	3	16	28	158	23	67	0	0	54	241
IA-12	5	38	11	41	32	112	0	0	48	191
IA-13	0	0	3	47	12	8	0	0	15	55
IA-14	5	45	3	52	3	20	0	0	11	117
IA-15	0	0	0	0	16	42	0	0	16	42
IA-16	1	15	0	0	45	80	0	0	46	95
IA-17	0	0	0	0	20	49	0	0	20	49
IA-18	0	0	0	0	5	31	0	0	5	31
IA-19	0	0	0	0	8	42	35	114	43	156
IA-20	0	0	0	0	33	66	0	0	33	66
Residential Sampling							71	339	71	339
Subtotal	*139*	*626*	*94*	*703*	*263*	*792*	*120*	*535*	*616*	*2656*
						Total for Phases I, II, III, & IV			**616**	**2656**

Notes:

Phase I of the Remedial Investigation took place between January 1997 and June 1998.

Phase II of the Remedial Investigation took place between June 1998 and February 2000.

Phase III of the Remedial Investigation took place between March and August 2001

Phase IV of the Remedial Investigation took place between October of 2002 and March of 2003.

NA: Not applicable

Table 2-1

Summary of Soil Sampling Results for La Calavera Residential Area (IA-19)
Phase IV Remedial Investigation

Project	Site	Sample #	Date	Depth	Arsenic mg/kg		Lead mg/kg		Analysis
TCEQ Medium Specific Concentrations (MSC) For Residenti Land Use					24 mg/Kg		500 mg/Kg		
Phase III	BL25	BL25A	06/26/01	0-2 in	56		349		XRF
		BL25B	06/26/01	2-4 in	64		403		XRF
		BL25C	08/13/01	1-2 ft	50		140		XRF
	BL26	BL26A	06/26/01	0-2 in	30		125		XRF
		BL26B	06/26/01	2-4 in	39		136		XRF
		BL26C	08/13/01	1-2 ft	31		180		XRF
	BL27	BL27A	06/26/01	0-2 in	20		95		XRF
		BL27B	06/26/01	2-4 in	25		146		XRF
		BL27C1	08/13/01	1-2 ft	18		130		XRF
		BL27C2	08/13/01	1-2 ft	25		140		XRF
	BL28	BL28A	06/26/01	0-2 in	38		50		XRF
		BL28B	06/26/01	2-4 in	61		65		XRF
		BL28C	08/13/01	1-2 ft	55		77		XRF
	BL29	BL29A	06/26/01	0-2 in	192		1600		XRF
		BL29B	06/26/01	2-4 in	23		48		XRF
		BL29C	08/13/01	1-2 ft	37		130		XRF
		BL29C	08/13/01	1-2 ft	33		61		XRF
	BL30	BL30A	06/26/01	0-2 in	145		662		XRF
		BL30B	06/26/01	2-4 in	23		44		XRF
	BL30	BL30C	08/13/01	1-2 ft	33		61		XRF
	BL51	BL51	06/26/01	0-2 in	166		1690		XRF
		BL51	06/26/01	0-2 in	216		1551		XRF
			Count		*22*		*22*		
			Min		*18*		*44*		
			Max		*216*		*1690*		
			x (averge)		*62.73*		*358.32*		

Table 2-1

Summary of Soil Sampling Results for La Calavera Residential Area (IA-19)
Phase IV Remedial Investigation

Project	Site	Sample #	Date	Depth	Arsenic mg/kg	Lead mg/kg	Analysis
TCEQ Medium Specific Concentrations (MSC) For Residenti Land Use					24 mg/Kg	500 mg/Kg	
Phase IV	1	1A	11/06/01	0-2 in	93	330	XRF
		1B	11/06/01	2-6 in	67	270	XRF
		1C	11/06/01	6-18 in	67	450	XRF
	2	2A	11/06/01	0-2 in	110	370	XRF
		2B	11/06/01	2-6 in	67	380	XRF
		2C	11/06/01	6-18 in	66	460	XRF
	3	3A	11/06/01	0-2 in	67	190	XRF
		3B1	11/06/01	2-6 in	49	270	XRF
		3B2	11/06/01	2-6 in	59	250	XRF
		3C	11/06/01	6-18 in	44	210	XRF
	4	4A1	11/06/01	0-2 in	140	370	XRF
		4A2	11/06/01	0-2 in	150	360	XRF
		4B	11/06/01	2-6 in	41	270	XRF
		4C	11/06/01	6-18 in	91	680	XRF
	5	5A	11/06/01	0-2 in	110	380	XRF
		5B	11/06/01	2-6 in	43	190	XRF
		5C	11/06/01	6-18 in	61	390	XRF
	6	6A1	11/06/01	0-2 in	56	200	XRF
		6A2	11/06/01	0-2 in	48	210	XRF
		6B	11/06/01	2-6 in	59	320	XRF
		6C	11/06/01	6-18 in	40	71	XRF
	7	7A	11/06/01	0-2 in	88	280	XRF
		7B	11/06/01	2-6 in	43	150	XRF
		7C	11/06/01	6-18 in	38	220	XRF
	8	8A	11/07/01	0-2 in	100	360	XRF
		8B	11/07/01	2-6 in	76	550	XRF
	9	9A	11/07/01	0-2 in	130	380	XRF
		9B	11/07/01	2-6 in	31	120	XRF
		9C	11/07/01	6-18 in	20	120	XRF
	10	10A	11/07/01	0-2 in	75	280	XRF
		10B	11/07/01	2-6 in	36	180	XRF
		10C	11/07/01	6-18 in	61	450	XRF
	11	11A1	11/07/01	0-2 in	180	760	XRF
		11A2	11/07/01	0-2 in	200	740	XRF
		11B	11/07/01	2-6 in	66	390	XRF

Table 2-1

Summary of Soil Sampling Results for La Calavera Residential Area (IA-19)
Phase IV Remedial Investigation

Project	Site	Sample #	Date	Depth	Arsenic mg/kg		Lead mg/kg		Analysis
TCEQ Medium Specific Concentrations (MSC) For Residenti Land Use					24 mg/Kg		500 mg/Kg		
		11C	11/07/01	6-18 in	35		190		XRF
	12	12A	11/07/01	0-2 in	160		540		XRF
		12B	11/07/01	2-6 in	40		180		XRF
		12C	11/07/01	6-18 in	20		150		XRF
	13	13A	11/07/01	0-2 in	82		340		XRF
		13B	11/07/01	2-6 in	54		170		XRF
		13C	11/07/01	6-18 in	21		80		XRF
	14	14A1	11/07/01	0-2 in	150		430		XRF
		14A2	11/07/01	0-2 in	110		370		XRF
		14B	11/07/01	2-6 in	70		330		XRF
		14C	11/07/01	6-18 in	60		320		XRF
	15	15A	11/07/01	0-2 in	120		370		XRF
		15B	11/07/01	2-6 in	47		210		XRF
		15C	11/07/01	6-18 in	31		210		XRF
	16	16A1	11/07/01	0-2 in	130		420		XRF
		16A2	11/07/01	0-2 in	140		410		XRF
		16B	11/07/01	2-6 in	26		150		XRF
		16C	11/07/01	6-18 in	29		87		XRF
	17	17A	11/07/01	0-2 in	94		290		XRF
		17B	11/07/01	2-6 in	30		76		XRF
		17C	11/07/01	6-18 in	23		54		XRF
	18	18A	11/07/01	0-2 in	230		640		XRF
		18B	11/07/01	2-6 in	150		760		XRF
		18C	11/07/01	6-18 in	100		670		XRF
	19	19A1	11/07/01	0-2 in	72		350		XRF
		19A2	11/07/01	0-2 in	82		350		XRF
		19B	11/07/01	2-6 in	60		370		XRF
	20	20A	11/07/01	0-2 in	73		260		XRF
		20B	11/07/01	2-6 in	35		170		XRF
		20C	11/07/01	6-18 in	39		70		XRF
	21	21A	11/08/01	0-2 in	43		190		XRF
		21B	11/08/01	2-6 in	35		150		XRF
		21C	11/08/01	6-18 in	32		130		XRF
	22	22A	11/08/01	0-2 in	54		240		XRF
		22B	11/08/01	2-6 in	57		190		XRF

Table 2-1

Summary of Soil Sampling Results for La Calavera Residential Area (IA-19)
Phase IV Remedial Investigation

Project	Site	Sample #	Date	Depth	Arsenic mg/kg	Lead mg/kg	Analysis
TCEQ Medium Specific Concentrations (MSC) For Residenti Land Use					24 mg/Kg	500 mg/Kg	
		22C	11/08/01	6-18 in	45	120	XRF
	23	23A	11/08/01	0-2 in	78	330	XRF
		23B	11/08/01	2-6 in	39	230	XRF
		23C	11/08/01	6-18 in	58	320	XRF
	24	24A1	11/08/01	0-2 in	100	610	XRF
		24A2	11/08/01	0-2 in	91	600	XRF
		24B	11/08/01	2-6 in	39	160	XRF
		24C	11/08/01	6-18 in	37	190	XRF
	25	25A	11/08/01	0-2 in	100	680	XRF
		25B1	11/08/01	2-6 in	65	700	XRF
		25B2	11/08/01	2-6 in	52	680	XRF
		25C	11/08/01	6-18 in	41	520	XRF
	26	26A	11/08/01	0-2 in	100	720	XRF
		26B	11/08/01	2-6 in	60	490	XRF
		26C	11/08/01	6-18 in	32	220	XRF
	27	27A	11/08/01	0-2 in	59	330	XRF
		27B	11/08/01	2-6 in	38	330	XRF
		27C	11/08/01	6-18 in	21	290	XRF
	28	28A	11/08/01	0-2 in	81	380	XRF
		28B	11/08/01	2-6 in	57	470	XRF
		28C	11/08/01	6-18 in	61	750	XRF
	29	29A1	11/09/01	0-2 in	37	200	XRF
		29A2	11/09/01	0-2 in	37	200	XRF
		29B	11/09/01	2-6 in	45	400	XRF
		29C	11/09/01	6-18 in	51	570	XRF
	30	30A	11/09/01	0-2 in	24	130	XRF
		30B	11/09/01	2-6 in	13	100	XRF
		30C	11/09/01	6-18 in	22	120	XRF
	31	31A1	11/09/01	0-2 in	32	200	XRF
		31A2	11/09/01	0-2 in	43	180	XRF
		31B	11/09/01	2-6 in	43	380	XRF
		31C	11/09/01	6-18 in	31	180	XRF
	32	32A	11/09/01	0-2 in	35	200	XRF
		32B	11/09/01	2-6 in	63	450	XRF
		32C	11/09/01	6-18 in	67	460	XRF

Table 2-1

Summary of Soil Sampling Results for La Calavera Residential Area (IA-19)
Phase IV Remedial Investigation

Project	Site	Sample #	Date	Depth	Arsenic mg/kg		Lead mg/kg		Analysis
TCEQ Medium Specific Concentrations (MSC) For Residenti Land Use					**24 mg/Kg**		**500 mg/Kg**		
	33	33A	11/09/01	0-2 in	43		330		XRF
		33B	11/09/01	2-6 in	53		230		XRF
		33C	11/09/01	6-18 in	34		160		XRF
	34	34A	11/09/01	0-2 in	30		170		XRF
		34B	11/09/01	2-6 in	90		560		XRF
		34C	11/09/01	6-18 in	69		360		XRF
	35	35A	11/09/01	0-2 in	26		150		XRF
		35B	11/09/01	2-6 in	42		210		XRF
		35C	11/09/01	6-18 in	48		310		XRF
			Count		*114*		*114*		
			Min		*13*		*54*		
			Max		*230*		*760*		
			x (averge)		*65.33*		*323.58*		

Note:
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg) or Parts per Million (ppm)
Depth below ground surface.

Table 2-2

Summary of Soil Sampling Results for The IBWC, American Dam Field Office (IA-5)
Phase IV Remedial Investigation

Project	Sample Site	Sample #	Date	Depth ft.	Arsenic mg/kg	Lead mg/kg	Cadmium mg/kg	Chromium mg/kg	Copper mg/kg	Iron mg/kg	Selenium mg/kg	Zinc mg/kg
TCEQ Medium Specific Concentrations (MSC) For Commercial/Industrial (SAI-Ind) Land Use					200 mg/kg	1,000 mg/kg	1,500 mg/kg	350,000 mg/kg	74000 mg/kg	NA mg/kg	9300 mg/kg	410,000 mg/kg
Phas IV	IBWC-1	IBWC-1A	10/30/02	0-1	59	543	31	24	771	14100	<10.	603
		IBWC-1B	10/30/02	1-2	57	405	10	23	641	16500	<10.	304
		IBWC-1C	10/30/02	2-3	15	62	<5.	15	81	12800	<10.	110
		IBWC-1D	10/30/02	3-4	<10	<10.	<5.	17	<10.	12900	<10.	33
		IBWC-1E1	10/30/02	4-5	<10.	38	<5.	14	52	11900	<10.	59
		IBWC-1E2 D	10/30/02	4-5	<10.	23	<5.	17	30	12600	<10.	54
	IBWC-2	IBWC-2A	10/30/02	0-1	55	447	21	19	735	13200	<10.	473
		IBWC-2B	10/30/02	1-2	41	333	<5.	15	447	12800	<10.	261
		IBWC-2C	10/30/02	2-3	32	332	<5.	20	483	13300	<10.	216
		IBWC-2D	10/30/02	3-4	11	69	<5.	14	101	11600	<10.	62
		IBWC-2E	10/30/02	4-5	<10.	37	<5.	14	54	10900	<10.	49
	IBWC-3	IBWC-3A	10/30/02	0-1	17	104	6	13	187	8590	<10.	139
		IBWC-3B	10/30/02	1-2	47	302	8	13	460	13600	<10.	331
		IBWC-3C	10/30/02	2-3	20	65	<5.	16	116	13000	<10.	335
		IBWC-3D	10/30/02	3-4	<10.	<10.	<5.	18	<10.	11400	<10.	28
		IBWC-3E	10/30/02	4-5	<10.	<10.	<5.	26	<10.	13600	<10.	38
	IBWC-4	IBWC-4A	10/30/02	0-1	100	881	46	17	1230	13100	<10.	979
		IBWC-4B	10/30/02	1-2	111	1020	57	16	1110	14500	<10.	999
		IBWC-4C	10/30/02	2-3	37	352	8	16	382	13500	<10.	217
		IBWC-4D	10/30/02	3-4	<10.	<10.	<5.	13	22	10900	<10.	34
		IBWC-4E	10/30/02	4-5	<10.	18	<5.	13	20	12200	<10.	46
	IBWC-5	IBWC-5A	10/30/02	0-1	144	1400	49	18	2450	10900	<10.	1380
		IBWC-5B	10/30/02	1-2	102	1100	69	18	1200	15500	<10.	1470
		IBWC-5C	10/30/02	2-3	24	137	7	16	241	11500	<10.	172
		IBWC-5D	10/30/02	3-4	<10.	<10.	<5.	16	17	10300	<10.	29
		IBWC-5E1	10/30/02	4-5	<10.	10	<5.	22	12	11200	<10.	36
		IBWC-5E2	10/30/02	4-5	<10.	15	<5.	20	17	11500	<10.	41
				Min	*<10*	*<10*	*<5*	*<10*	*<10*	*8590*	*<10*	*28*
				Max	*144*	*1400*	*69*	*26*	*2450*	*16500*	*<10*	*1470*

Note:
<: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg) or Parts Per Million (ppm)
Depth below ground surface.
MSC-SAI = TCEQ Medium Specific Consentrations for Soil/Air, Ingestion, and Dermal absorption pathways at Commercial/Industriall Facilities

Table 2-3

Adult Lead Exposure at Commercial/Industrial Facilities (IBWC Workers IA-5)
Phase IV Remedial Investigation

Equation for Adult Lead Exposure for Commercial/Industrial Land Use (Tier 1)		
30 TAC 350.76©(2)p		
$^{Soil}Soil_{Ing} = {}^{Soil}RBEL_{Ing}$		
$^{Soil}RBEL_{Ing}$ (mg/kg) = $\dfrac{(PbB_{95}\ fetal / (R \times (GSD_i)^{1.645})) - PbB0}{BKSF \times (IR_{sd} \times AF_{sd} \times EF_{sd} / 365)}$		**1,600.37**
Parameter	**Definition (units)**	**Default**
PbB_{95} fetal	95_{th} Percentile PbB in Fetus (ug/dL)	10
R	Mean Ratio of Fetal to Maternal PbB	0.9
GSD_i	Individual Geometric Standard Deviation	1.91
PbB0	Baseline Blood Level Value (ug/dL)	1.64
BKSF	Biokinetic Slope Factor (ug/dL per ug/day)	0.4
IR_{sd}	Soil/Dust Ingestion Rate (g/day)	0.05
AF_{sd}	Soil/Dust Exposure Frequency (days/yr)	250
EF_{sd}	Absolute Absorption Fraction of Lead in Soil/Dust	0.1
^{Soil} ***RBEL*** $_{Ing}$ ***(mg/kg) =*** ***1,600 mg/kg***		

Table 2-4

Summary of Soil Sampling Results for Smeltertown Area (IA-5), Phase I RI (October 1998)
Phase IV Remedial Investigation

Sample Site	Sample #	Date	Depth ft.	As mg/kg	Pb mg/kg	Cd mg/kg	Cr mg/kg	Cu mg/kg	Fe mg/kg	Se mg/kg	Zn mg/kg
SSIA5-1	SSIA5-1A	7/7/1997	0 ft.	240	4200	130	46	6600	21000	30	2400
SSIA5-1	SSIA5-1B	7/8/1997	1.5 ft.	28	420	17	15	400	19000	5	200
EP-80	EP-80A	6/6/1997	0 ft.	26	95	5	41	160	14000	5	200
EP-80	EP-80B	6/6/1997	5 ft.	10	46	5	15	34	16000	5	79
RIBH-7	RIBH-7A	7/1/1997	0 ft.	53	1000	28	130	1500	21000	5	780
RIBH-8	RIBH-8A	7/1/1997	0 ft.	120	3300	120	63	3800	22000	14	3100
RIBH-9	RIBH-9A	7/1/1997	0 ft.	63	1100	46	15	1600	23000	5	1500
RIBH-10	RIBH-10A	7/1/1997	0 ft.	46	400	5	15	760	18000	5	360
SSIA5-10	SSIA5-10A	7/8/1997	0 ft.	130	2800	110	34	3900	19000	12	2500
SSIA5-10	SSIA5-10B	7/8/1997	1.5 ft	10	250	5	30	320	17000	5	200
SSIA5-11	SSIA5-11A	7/8/1997	0 ft.	10	740	22	36	1100	21000	5	630
SSIA5-11	SSIA5-11B	7/8/1997	1.5 ft.	10	470	23	66	570	19000	5	360
SSIA5-12	SSIA5-12A	7/8/1997	0 ft.	21	540	19	41	810	21000	5	440
SSIA5-12	SSIA5-12B	7/8/1997	1.5 ft.	10	440	11	100	430	20000	5	340
SSIA5-13	SSIA5-13A	7/8/1997	0 ft.	87	830	36	69	2200	17000	5	850
SSIA5-13	SSIA5-13B	7/8/1997	1.5 ft.	10	110	5	15	100	18000	5	100
SSIA5-14	SSIA5-14A	7/8/1997	0 ft.	78	170	5	60	1300	14000	5	220
SSIA5-14	SSIA5-14B	7/8/1997	1.5 ft.	10	130	5	15	120	19000	5	54
SSIA5-15	SSIA5-15A	7/14/1997	0 ft.	86	420	20	74	2800	23000	5	900
SSIA5-15	SSIA5-15B	7/14/1997	1.5 ft.	10	34	5	32	39	17000	5	59
SSIA5-16	SSIA5-16A	7/14/1997	0 ft.	27	610	24	89	1000	32000	5	650
SSIA5-16	SSIA5-16B	7/14/1997	1.5 ft.	10	150	5	15	200	20000	5	190
SSIA5-17	SSIA5-17A	7/14/1997	0 ft.	83	1100	85	15	1800	23000	5	1400
SSIA5-17	SSIA5-17B	7/14/1997	1.5 ft.	24	140	5	15	150	18000	5	150
SSIA5-18	SSIA5-18A	7/14/1997	0 ft.	26	200	11	15	1200	20000	5	430
SSIA5-18	SSIA5-18B	7/14/1997	1.5 ft.	10	15	5	15	27	16000	5	28
SSIA5-19	SSIA5-19A	7/14/1997	0 ft.	160	2400	150	39	3400	28000	18	3300
SSIA5-19	SSIA5-19B	7/14/1997	1.5 ft.	10	310	29	15	370	15000	5	430
SSIA5-2	SSIA5-2A	7/8/1997	0 ft.	71	580	66	15	1100	20000	5	410
SSIA5-2	SSIA5-2B	7/8/1997	1.5 ft.	22	44	5	82	42	19000	5	28
SSIA5-3	SSIA5-3A	7/8/1997	0 ft.	130	2700	110	170	7200	25000	5	2000
SSIA5-3	SSIA5-3B	7/8/1997	1.5 ft.	10	850	16	15	1200	19000	5	590
SSIA5-4	SSIA5-4A	7/8/1997	0 ft.	37	1100	41	30	1800	21000	11	770
SSIA5-4	SSIA5-4B	7/8/1997	1.5 ft.	10	1800	44	37	1600	23000	12	1100
SSIA5-5	SSIA5-5A	7/8/1997	0 ft.	10	1200	36	30	1100	20000	20	740
SSIA5-5	SSIA5-5B	7/8/1997	1.5 ft.	10	210	5	15	130	21000	5	130
SSIA5-6	SSIA5-6A	7/8/1997	0 ft.	10	370	14	15	650	20000	5	280
SSIA5-6	SSIA5-6B	7/8/1997	1.5 ft.	10	370	10	97	310	21000	5	210
SSIA5-7	SSIA5-7A	7/8/1997	0 ft.	110	1700	56	15	3800	24000	5	1300
SSIA5-7	SSIA5-7B	7/8/1997	1.5 ft.	10	68	5	15	59	17000	5	52
SSIA5-7	SSIA5-7B2	7/8/1997	1.5 ft.	10	5	5	15	24	20000	5	52
SSIA5-8	SSIA5-8A	7/8/1997	0 ft.	31	1200	42	47	2800	21000	16	990
SSIA5-8	SSIA5-8B	7/8/1997	1.5 ft.	32	30	5	15	10	16000	5	28
SSIA5-9	SSIA5-9A	7/8/1997	0 ft.	90	800	39	15	2800	23000	5	850
SSIA5-9	SSIA5-9B	7/8/1997	1.5 ft.	10	110	5	68	260	17000	5	83
			n=	*45*	*45*	*45*	*45*	*45*	*45*	*45*	*45*
			Min	*10*	*5*	*5*	*15*	*10*	*14000*	*5*	*28*
			Max	*240*	*4200*	*150*	*170*	*7200*	*32000*	*30*	*3300*
			UCL	*64*	*1,884*	*52.3*	*50.7*	*4,741*	*20,826*	*7.78*	*1,344*
			average=	*44.9*	*790.2*	*32.0*	*40.6*	*1368.3*	*19955.6*	*7.1*	*699.2*

Table 2-5

Summary of Soil Sampling Results for the Flood Plain of the Rio Grande, in the Vicinity of EP-111, EP-127, EP-128 and EP-132 (IA-5)
Phase IV Remedial Investigation

Project	Sample Site	Sample Number	Date	Depth feet	Arsenic ppm	Lead ppm	Cadmium ppm	Chromium ppm	Copper ppm	Iron ppm	Selenium ppm	Zinc ppm
Phase IV	BH5-11	BH5-11A	10/30/02	0-1	144	1480	62	27	1780	14900	5	908
		BH5-11B	10/30/02	1-2	115	646	13	20	604	16600	5	359
		BH5-11C	10/30/02	2-3	95	801	26	18	1220	14200	5	490
		BH5-11D	10/30/02	3-4	36	246	2.5.	21	210	15300	5	174
		BH5-11E	10/30/02	4-5	23	129	2.5.	20	178	18900	5	120
		BH5-11F	10/30/02	7-9	5	5	2.5.	11	5	12300	5	35
		BH5-11G	10/30/02	10-12	13	25	2.5.	15	30	11700	5	44
		BH5-11G D	10/30/02	10-12	17	36	2.5.	19	45	14100	5	55
		BH5-11H	10/30/02	15-17	12	12	2.5.	21	12	13000	5	37
	BH5-12	BH5-12A	10/30/02	0-1	210	2140	80	13	1720	11600	5	1180
		BH5-12B	10/30/02	1-2	106	406	6	17	437	12700	5	225
		BH5-12C	10/30/02	2-3	72	633	15	15	571	10200	5	348
		BH5-12D	10/30/02	3-4	22	13	2.5.	13	5	8030	5	28
	BH5-13	BH5-13A	10/30/02	0-1	85	972	25	27	1100	13200	5	511
		BH5-13B	10/30/02	1-2	58	655	14	12	604	8900	5	322
		BH5-13C	10/30/02	4-5	79	654	24	19	738	14400	5	448
		BH5-13C2 D	10/30/02	4-5	55	585	19	5	565	6920	5	379
		BH5-13D	10/30/02	7-9	5	13	2.5.	15	15	18500	5	55
		BH5-13E	10/30/02	12-14	12	76	2.5.	12	111	14200	5	84
		BH5-13F	10/30/02	15-17	5	13	2.5.	19	17	21400	5	65
		BH5-13G	10/30/02	20-22	5	5	2.5.	12	5	13000	5	35
	EP-128	EP128-A	10/29/02	2-3	34	230	43	31	177	8930	42	176
		EP128-B	10/29/02	3-4	23	244	20	28	218	8230	5	173
	EP-133	EP133-A	10/28/02	0-1	16	150	6	17	173	9560	5	110
		EP133-B	10/28/02	1-2	5	103	2.5.	22	57	6910	5	69
		EP133-C	10/28/02	2-3	15	118	2.5.	15	74	9630	5	91
		EP133-D1	10/28/02	3-4	22	100	2.5.	24	90	10900	5	102
		EP133-D2 D	10/28/02	3-4	39	191	7	22	180	10000	5	149
		EP133-E	10/28/02	4-5	5	5	2.5.	30	5	4060	5	18
		EP133-F	10/28/02	7-8	11	5	2.5.	24	5	4970	5	17
	EP-134	EP134-A	10/29/02	0-1	19	221	6	29	259	8830	5	152
		EP134-B	10/29/02	1-2	30	312	6	21	241	11300	5	177
		EP134-C	10/29/02	2-3	59	282	2.5.	26	238	13700	5	143
		EP134-D	10/29/02	3-4	69	440	2.5.	20	203	13200	5	302
		EP134-E	10/29/02	4-5	42	334	6	17	299	12200	5	176
		EP134-F	10/29/02	6-7	11	40	2.5.	22	37	8150	5	37
	EP-135	EP135-A	10/29/02	3-4	13	11	2.5.	15	10	13800	5	43
		EP135-A1	10/29/02	0-1	74	704	12	32	523	14100	5	734
		EP135-B	10/29/02	4-5	11	19	2.5.	20	12	13100	5	41
		EP135-B11	10/29/02	1-2	42	181	2.5.	22	37	12800	5	85
		EP135-B12 D	10/29/02	1-2	33	146	2.5.	20	25	11700	5	67
		EP135-C	10/29/02	7-9	21	5	2.5.	14	5	13400	5	38
		EP135-C1	10/29/02	2-3	64	439	15	23	402	12700	5	285
		EP135-D	10/29/02	13-15	31	5	2.5.	13	5	11650	5	35
	EP-136	EP136-A	10/29/02	0-1	61	759	15	19	598	11400	5	380
		EP136-B	10/29/02	1-2	13	131	2.5.	20	87	7730	5	87
		EP136-C	10/29/02	2-3	27	196	6	18	240	8010	5	148
		EP136-D	10/29/02	3-4	5	114	2.5.	21	90	6840	5	87
		EP136-E	10/29/02	4-5	5	38	2.5.	29	44	4980	5	40
		EP136-F1	10/29/02	7-8	5	5	2.5.	29	5	3980	5	13
		EP136-F2 D	10/29/02	7-8	5	5	2.5.	26	5	4700	5	16
	EP-137	EP137-A	10/28/02	0-1	30	227	26	25	199	9240	17	157
		EP137-B	10/28/02	1-2	30	188	40	15	142	8000	57	175
		EP137-C	10/28/02	4-5	41	225	45	25	180	8450	120	251
		EP137-D	10/28/02	7-8	5	18	20	55	14	3680	14	137
		9		*Count*	*55*	*55*	*25*	*55*	*55*	*55*	*55*	*55*
				Min	*5*	*5*	*6*	*5*	*5*	*3680*	*5*	*13*
				Max	*210*	*2140*	*80*	*55*	*1780*	*21400*	*120*	*1180*
				Average	*38*	*286*	*22*	*21*	*270*	*11000*	*9*	*193*
				MSC SAI-Ind.	200 mg/kg	1000 mg/kg	1500 mg/kg	350000 mg/kg	74000 mg/kg	NA	9300 mg/kg	410000 mg/kg

Note:
For samples displaying concentrations below laboratory limits, a halh of laboratoryd detection limits was used to perform statistical calculations.
NA = Not assigned
< below laboratory detection limits
MSC-SAI-Ind = TCEQ Medium Specific Concentrations for Soi/Air, Ingestion, and Dermal absorption pathways at Commercial/Industrial facilities.

Table 2-6

Summary of Residential Soil Sampling Results
Phase IV Remedial Investigation

Sample Number	Date Sampled	Sample Location	Arsenic ppm	Cadmium ppm	Chromium ppm	Copper ppm	Iron ppm	Lead ppm	Selenium ppm	Zinc ppm
L020720-001	28-Aug-02	#1 0-1	15	9.8	41	457	13300	388	<10	486
L020720-002	28-Aug-02	#1 1-6	10	5.7	32	181	11300	209	<10	168
L020720-003	28-Aug-02	#1 6-12	11	2.6	21	113	10300	86	<10	75
L020720-004	28-Aug-02	#2 0-1	10	6.7	35	309	14200	303	<10	371
L020720-005	28-Aug-02	#2 1-6	<10.	3.8	26	109	9940	122	<10	120
L020720-006	28-Aug-02	#2 6-12	<10.	2.3	23	97	7520	61	<10	76
L020720-007	28-Aug-02	#3 0-1	13	6.6	40	259	11900	244	<10	277
L020720-008	28-Aug-02	#3 1-6	<10.	6	41	198	11300	200	<10	206
L020720-009	28-Aug-02	#3 6-12	<10.	2.7	28	92	9470	72	<10	95
L020720-010	28-Aug-02	#4 0-1	19	8.5	32	335	13500	342	<10	389
L020720-011	28-Aug-02	#4 1-6	<10.	3.3	16	100	11500	94	<10	89
L020720-012	28-Aug-02	#4 6-12	12	<2.0	23	90	11800	57	<10	58
L020720-013	28-Aug-02	#5 0-1	32	21	38	753	14500	740	<10	605
L020720-014	28-Aug-02	#5 1-6	27	17	29	507	12200	529	<10	391
L020720-015	28-Aug-02	#5 6-12	20	12	27	381	11700	376	<10	260
L020720-016	28-Aug-02	#6 0-1	56	21	47	661	14300	757	<10	527
L020720-017	28-Aug-02	#6 1-6	28	12	31	326	12300	331	<10	250
L020720-018	28-Aug-02	#6 6-12	14	3.1	21	134	12000	96	<10	80
L020720-019	28-Aug-02	#7 0-1	<10.	<2.0	21	<10.	6100	<10.	<10	23
L020720-020	28-Aug-02	#7 1-6	<10.	<2.0	22	<10.	5110	<10.	<10	18
L020720-021	28-Aug-02	#7 6-12	<10.	<2.0	20	<10.	6640	<10.	<10	20
L020720-022	28-Aug-02	#8 0-1	<10.	<2.0	16	16	6260	13	<10	27
L020720-023	28-Aug-02	#8 1-6	<10.	2.2	13	<10.	5280	<10.	<10	15
L020720-024	28-Aug-02	#8 6-12	<10.	<2.0	23	181	8090	84	<10	131
L020720-025	28-Aug-02	#9 0-1	10	<2.0	22	51	9990	27	<10	70
L020720-026	28-Aug-02	#9 1-6	11	<2.0	17	33	10600	29	<10	46
L020720-027	28-Aug-02	#10 0-1	<10.	<2.0	66	61	14900	32	<10	88
L020720-028	28-Aug-02	#10 1-6	<10.	<2.0	34	17	7680	13	<10	37
L020720-029	28-Aug-02	#10 6-12	<10.	<2.0	42	41	9640	27	<10	71
L020720-030	28-Aug-02	#11 0-1	<10.	<2.0	16	47	7370	10	<10	42
L020720-031	28-Aug-02	#11 1-6	<10.	<2.0	15	36	7050	13	<10	65
L020720-032	28-Aug-02	#11 6-12	<10.	<2.0	19	78	8280	28	<10	129
L020720-033	28-Aug-02	#12 0-1	21	7.1	28	339	17900	314	<10	380
L020720-034	28-Aug-02	#12 1-6	16	5.5	25	210	16700	215	<10	228
L020720-035	28-Aug-02	#12 6-12	17	4.5	22	168	17800	166	<10	197
L020720-036	28-Aug-02	#13 0-1	20	4.6	23	264	19300	150	<10	260
L020720-037	28-Aug-02	#13 1-6	17	4.2	25	164	19100	122	<10	203
L020720-038	28-Aug-02	#13 6-12	15	<2.0	19	62	14700	46	<10	86
L020720-039	28-Aug-02	#14 0-1	16	4.8	33	242	16200	115	<10	336
L020720-040	28-Aug-02	#14 1-6	17	2.9	27	86	18200	66	<10	123
L020720-041	28-Aug-02	#14 6-12	13	<2.0	20	48	21200	31	<10	95
L020720-042	28-Aug-02	#15 0-1	16	5.9	25	245	21000	179	<10	381
L020720-043	28-Aug-02	#15 1-6	14	3.1	19	101	19200	78	<10	160
L020720-044	28-Aug-02	#15 6-12	17	<2.0	20	46	20500	30	<10	96
L020720-045	28-Aug-02	#16 0-1	11	<2.0	25	27	23100	12	<10	85
L020720-046	28-Aug-02	#16 1-6	12	<2.0	23	23	23300	12	<10	74
L020720-047	28-Aug-02	#16 6-12	11	<2.0	24	23	23200	12	<10	79
L020720-048	28-Aug-02	#17 0-1	<10.	<2.0	25	22	23500	12	<10	74
L020720-049	28-Aug-02	#17 1-6	<10.	<2.0	26	22	24600	11	<10	76
L020720-050	28-Aug-02	#17 6-12	<10.	<2.0	24	21	23400	12	<10	76
L020720-051	28-Aug-02	#18 0-1	<10.	<2.0	23	20	21900	12	<10	73
L020720-052	28-Aug-02	#18 1-6	13	<2.0	23	143	22300	12	<10	75
L020720-053	28-Aug-02	#18 6-12	12	<2.0	23	21	21900	12	<10	73

Table 2-6

Summary of Residential Soil Sampling Results
Phase IV Remedial Investigation

Sample Number	Date Sampled	Sample Location	Arsenic ppm	Cadmium ppm	Chromium ppm	Copper ppm	Iron ppm	Lead ppm	Selenium ppm	Zinc ppm
L020720-001	28-Aug-02	#1 0-1	15	9.8	41	457	13300	388	<10	486
L020720-002	28-Aug-02	#1 1-6	10	5.7	32	181	11300	209	<10	168
L020975-001	20-Nov-02	407UPSOI	18	<5.	15	183	11300	187	<10.	213
L020975-002	20-Nov-02	407UPSOI	24	<5.	14	147	11000	138	<10.	149
L020975-003	20-Nov-02	407UPSOI	24	7	30	512	10700	281	<10.	245
L020975-004	20-Nov-02	407UPSOI	24	<5.	16	194	11000	164	<10.	162
L020975-005	20-Nov-02	407UPSOI	11	<5.	11	13	8520	13	<10.	27
L020975-006	20-Nov-02	407UPSOI	28	15	23	750	15300	534	<10.	525
L020975-007	20-Nov-02	407UPSOI	35	9	18	346	13200	348	<10.	300
L020975-008	20-Nov-02	407UPSOI	27	15	19	597	13400	615	<10.	489
L020975-009	20-Nov-02	407UPSOI	43	8	16	264	10900	320	<10.	230
L021023-001	09-Dec-02	2312 VIRC	<10.	2.2	27	231	7618	59	<10.	145
L021023-002	09-Dec-02	2312 VIRC	<10.	1.2	17	67	8831	37	<10.	58
L021023-003	09-Dec-02	1227 ROB	26	4.3	20	224	9211	203	<10.	274
L021023-004	09-Dec-02	1227 ROB	17	4.5	28	177	9986	264	<10.	245
L021023-005	09-Dec-02	1227 ROB	22	4.1	26	143	10860	196	<10.	335
L021023-006	09-Dec-02	1227 ROB	25	5	20	245	8834	225	<10.	289
L021023-007	10-Dec-02	801 BALT	44	21	21	748	13890	969	<10.	911
L021023-008	10-Dec-02	801 BALT	33	18	21	542	11830	763	<10.	540
L021023-009	10-Dec-02	801 BALT	21	2	23	123	9673	105	<10.	98
L021023-010	10-Dec-02	801 BALT	<10.	1.2	13	48	7730	51	<10.	68
L021023-011	10-Dec-02	801 BALT	20	5.8	22	268	10620	252	<10.	247
L021023-012	10-Dec-02	801 BALT	24	<1.0	17	35	11900	<10.	<10.	34
L021023-013	11-Dec-02	709 ROBI	<10.	3.8	<10.	175	9542	177	<10.	298
L021023-014	11-Dec-02	709 ROBI	47	15	17	590	14570	623	<10.	533
L021023-015	11-Dec-02	709 ROBI	33	5.6	16	229	10030	264	<10.	194
L021023-016	11-Dec-02	709 ROBI	<10.	4.1	13	190	10660	185	<10.	231
L021023-017	11-Dec-02	709 ROBI	18	8.5	30	376	12530	382	<10.	417
L021023-018	11-Dec-02	709 ROBI	18	11	23	382	12890	453	<10.	533
L021023-019	10-Dec-02	511 BLAN	27	3.1	15	217	9652	159	<10.	265
L021023-020	10-Dec-02	511 BLAN	31	3.5	14	209	10360	189	<10.	247
L021023-021	10-Dec-02	511 BLAN	42	2.8	15	162	13160	154	<10.	167
L021023-022	10-Dec-02	511 BLAN	11	1.9	14	128	8525	100	<10.	197
L021023-023	10-Dec-02	511 BLAN	11	3	13	144	8939	159	<10.	191
L021023-024	10-Dec-02	511 BLAN	30	14	18	529	12000	682	<10.	476
L021023-025	09-Dec-02	4256 PARI	102	1.5	23	83	11810	132	<10.	404
L021023-026	09-Dec-02	4256 PARI	<10.	<1.0	23	26	6611	24	<10.	84
L021023-027	09-Dec-02	4256 PARI	21	<1.0	21	43	7941	47	<10.	154
L021023-028	09-Dec-02	4256 PARI	11	<1.0	13	48	11930	29	<10.	101
L021023-029	09-Dec-02	4256 PARI	11	1.2	14	43	15310	36	<10.	90
L021023-030	09-Dec-02	4256 PARI	<10.	<1.0	27	26	15550	17	<10.	71
L021023-031	10-Dec-02	4256 PARI	91	1.3	23	82	10710	116	<10.	375
L021023-032	10-Dec-02	1415 HAW	16	7.3	15	243	9337	368	<10.	269
L021023-033	10-Dec-02	1415 HAW	20	10	17	337	9767	472	<10.	341
L021023-034	10-Dec-02	1415 HAW	28	13	17	385	11230	637	<10.	398
L021023-035	10-Dec-02	1415 HAW	17	7	14	254	8466	341	<10.	335
L021023-036	10-Dec-02	1415 HAW	19	7.6	17	258	8810	387	<10.	398
L021023-037	10-Dec-02	1415 HAW	17	6.8	15	232	8388	325	<10.	333
L021023-038	09-Dec-02	3823 STAI	<10.	1.9	13	108	9486	75	<10.	157
L021023-039	09-Dec-02	3823 STAI	<10.	1.4	13	75	8705	54	<10.	98
L021023-040	09-Dec-02	3823 STAI	<10.	1.1	14	41	9000	39	<10.	52
L021023-041	09-Dec-02	3823 STAI	12	3.6	20	181	10630	159	<10.	367
L021023-042	09-Dec-02	3823 STAI	<10.	1.5	17	58	7858	50	<10.	97

Table 2-6

Summary of Residential Soil Sampling Results
Phase IV Remedial Investigation

Sample Number	Date Sampled	Sample Location	Arsenic ppm	Cadmium ppm	Chromium ppm	Copper ppm	Iron ppm	Lead ppm	Selenium ppm	Zinc ppm
L020720-001	28-Aug-02	#1 0-1	15	9.8	41	457	13300	388	<10	486
L020720-002	28-Aug-02	#1 1-6	10	5.7	32	181	11300	209	<10	168
L021023-043	09-Dec-02	3823 STA	<10.	<1.0	15	23	11040	13	<10.	37
L021023-044	09-Dec-02	3823 STA	<10.	1.9	12	112	9280	75	<10.	165
L021023-045	09-Dec-02	2312 VIR	22	2.3	16	175	9632	94	<10.	221
L021023-046	09-Dec-02	2312 VIR	22	3.9	16	297	9514	154	<10.	213
L021023-047	09-Dec-02	2312 VIR	11	3.9	13	100	8413	112	<10.	95
L021023-048	09-Dec-02	2312 VIR	15	2.7	14	213	9788	78	<10.	246
L030004-001	06-Jan-03	3820 WAY	24	1.1	10	119	8716	80	<10.	181
L030004-002	06-Jan-03	3820 WAY	31	7.4	13	357	12540	343	<10.	352
L030004-003	06-Jan-03	3820 WAY	16	<1.0	12	42	12520	25	<10.	59
L030004-004	06-Jan-03	3820 WAY	<10.	1.5	14	66	7913	54	<10.	95
L030004-005	06-Jan-03	3820 WAY	<10.	1.9	10	83	7761	67	<10.	95
L030004-006	06-Jan-03	3820 WAY	<10.	<1.0	<10.	<10.	6560	<10.	<10.	16
L030004-007	06-Jan-03	4233 CAN	12	4.4	17	185	9477	168	<10.	242
L030004-008	06-Jan-03	4233 CAN	15	2.9	19	114	11910	122	<10.	152
L030004-009	06-Jan-03	4233 CAN	<10.	<1.0	16	16	9159	13	<10.	27
L030004-010	06-Jan-03	4233 CAN	13	2	13	87	12370	80	<10.	118
L030004-011	06-Jan-03	4233 CAN	20	1.7	13	69	13460	60	<10.	91
L030004-012	06-Jan-03	4233 CAN	11	2.8	10	64	9740	111	<10.	67
L030004-013	06-Jan-03	708 BLAC	58	15	24	685	14990	933	<10.	531
L030004-014	06-Jan-03	708 BLAC	46	16	23	574	11680	676	<10.	539
L030004-015	06-Jan-03	708 BLAC	31	2.4	13	136	11070	130	<10.	97
L030004-016	07-Jan-03	709 BALT	14	7.3	12	182	10450	164	<10.	129
L030004-017	07-Jan-03	709 BALT	23	14	11	352	6781	432	<10.	354
L030004-018	07-Jan-03	709 BALT	25	11	13	216	8836	261	<10.	191
L030004-019	07-Jan-03	709 BALT	20	2.1	11	68	9853	46	<10.	51
L030004-020	06-Jan-03	1435 FEW	14	5.2	12	164	8668	203	<10.	242
L030004-021	06-Jan-03	1435 FEW	36	6.3	16	202	14360	232	<10.	233
L030004-022	06-Jan-03	1435 FEW	24	4.5	14	180	14300	183	<10.	215
L030004-023	06-Jan-03	1435 FEW	11	3.2	11	78	7188	140	<10.	145
L030004-024	06-Jan-03	1435 FEW	23	5.6	14	203	9385	211	<10.	171
L030004-025	06-Jan-03	1435 FEW	12	<1.0	19	19	8358	<10.	<10.	26
L030004-026	06-Jan-03	900 KERN	10	2.2	15	101	9879	78	<10.	77
L030004-027	07-Jan-03	4205 CAN	16	3.7	23	177	13850	196	<10.	262
L030004-028	07-Jan-03	4205 CAN	16	<1.0	17	27	11910	28	<10.	52
L030004-029	07-Jan-03	4205 CAN	18	<1.0	12	<10.	12360	<10.	<10.	30
L030004-030	07-Jan-03	4205 CAN	<10.	<1.0	16	13	10150	<10.	<10.	33
L030004-031	07-Jan-03	4205 CAN	<10.	<1.0	19	22	11330	19	<10.	51
L030004-032	07-Jan-03	4205 CAN	13	<1.0	15	19	12340	13	<10.	44
L030004-033	07-Jan-03	709 BALT	17	4	20	143	18210	118	<10.	168
L030004-034	07-Jan-03	709 BALT	16	3.8	22	118	19270	101	<10.	154
L030004-035	07-Jan-03	709 BALT	27	22	24	649	13060	798	<10.	573
L030004-036	07-Jan-03	2211 CAM	20	6.5	24	290	7159	281	<10.	276
L030004-037	07-Jan-03	2211 CAM	42	13	28	393	9991	512	<10.	298
L030004-038	07-Jan-03	2211 CAM	107	9.1	37	486	9666	484	<10.	406
L030004-039	07-Jan-03	2211 CAM	30	8.6	32	295	7837	335	<10.	222
L030004-040	06-Jan-03	900 KERN	37	22	38	701	13730	779	<10.	775
L030004-041	06-Jan-03	900 KERN	39	23	50	789	14300	849	<10.	832
L030004-042	06-Jan-03	900 KERN	34	19	40	670	13540	647	<10.	688
L030004-043	06-Jan-03	900 KERN	32	21	44	692	12140	752	<10.	679
L030004-044	06-Jan-03	900 KERN	26	17	53	436	11600	577	<10.	510
L030004-045	06-Jan-03	900 KERN	22	13	37	334	11280	460	<10.	376

Table 2-6

Summary of Residential Soil Sampling Results
Phase IV Remedial Investigation

Sample Number	Date Sampled	Sample Location	Arsenic ppm	Cadmium ppm	Chromium ppm	Copper ppm	Iron ppm	Lead ppm	Selenium ppm	Zinc ppm
L020720-001	28-Aug-02	#1 0-1	15	9.8	41	457	13300	388	<10	486
L020720-002	28-Aug-02	#1 1-6	10	5.7	32	181	11300	209	<10	168
L030022-001	17-Jan-03	A (0-1)	<10.	<1.0	<10.	59	7070	<10.	<10.	26
L030022-002	17-Jan-03	A (1-6)	<10.	<1.0	16	25	8535	14	<10.	30
L030022-003	17-Jan-03	A (6-12)	<10.	<1.0	11	13	5856	<10.	<10.	21
L030022-004	17-Jan-03	B (0-1)	<10.	<1.0	19	19	5353	<10.	<10.	52
L030022-005	17-Jan-03	B (1-6)	<10.	<1.0	<10.	<10.	5513	<10.	<10.	16
L030022-006	17-Jan-03	B (6-12)	<10.	<1.0	15	<10.	6483	<10.	<10.	19
L030022-007	17-Jan-03	C (0-1)	<10.	<1.0	<10.	11	1759	<10.	<10.	16
L030022-008	17-Jan-03	603 UPSO	50	19	23	622	11440	884	<10.	789
L030022-009	17-Jan-03	603 UPSO	55	22	18	717	11610	975	<10.	880
L030022-010	17-Jan-03	603 UPSO	51	15	22	483	11950	761	<10.	673
L030022-011	17-Jan-03	603 UPSO	20	5.8	18	153	8534	631	<10.	337
L030022-012	17-Jan-03	603 UPSO	20	4.2	15	128	7454	397	<10.	226
L030022-013	17-Jan-03	603 UPSO	25	5.5	29	126	9819	536	<10.	349
L030022-014	17-Jan-03	603 UPSO	30	8.9	18	319	9283	1173	<10.	853
L030022-015	17-Jan-03	603 UPSO	32	6.9	24	231	7439	912	<10.	508
L030022-016	17-Jan-03	603 UPSO	35	9.1	29	242	8012	739	<10.	630
L030028-001	09-Jan-03	520 PROS	14	3.8	41	351	13070	246	<10.	406
L030028-002	09-Jan-03	520 PROS	13	3.9	32	168	9239	242	<10.	266
L030028-003	09-Jan-03	520 PROS	10	1.4	15	80	8629	149	<10.	104
L030028-004	13-Jan-03	519 PROS	<10.	<1.0	25	<10.	7651	<10.	<10.	27
L030028-005	13-Jan-03	519 PROS	<10.	<1.0	22	10	7594	<10.	<10.	26
L030028-006	13-Jan-03	519 PROS	<10.	<1.0	<10.	<10.	6276	<10.	<10.	21
L030028-007	15-Jan-03	1216 ST.V	10	5	15	185	8022	255	<10.	337
L030028-008	15-Jan-03	1216 ST.V	15	6.2	22	234	9438	353	<10.	407
L030028-009	15-Jan-03	1216 ST.V	<10.	3.8	17	115	8419	241	<10.	261
L030028-010	22-Jan-03	411 CINCI	23	6.3	11	475	9269	257	<10.	301
L030028-011	22-Jan-03	411 CINCI	17	3.8	12	288	7818	177	<10.	162
L030028-012	22-Jan-03	411 CINCI	17	<1.0	13	70	9829	45	<10.	41
L030028-013	22-Jan-03	411 CINCI	25	13	17	612	10820	442	<10.	496
L030028-014	22-Jan-03	411 CINCI	18	6.6	29	275	11040	260	<10.	306
L030028-015	22-Jan-03	411 CINCI	17	5.3	28	151	8006	222	<10.	239
L030071-001	19-Feb-03	RIO 1A	14	4.6	17	190	9562	91	<10.	134
L030071-002	19-Feb-03	RIO 1B	14	3.7	18	250	11590	74	<10.	142
L030071-003	19-Feb-03	RIO 1C	31	15	33	278	11420	237	<10.	236
L030071-004	19-Feb-03	RIO 2A	22	6.4	15	594	11610	109	<10.	196
L030071-005	19-Feb-03	RIO 2B	11	3	15	242	9111	49	<10.	82
L030071-006	19-Feb-03	RIO 2C	<10.	<2.0	13	38	8229	23	<10.	33
L030071-007	19-Feb-03	RIO 3A1	19	5.6	29	180	11030	150	<10.	115
L030071-008	19-Feb-03	RIO 3A2	18	5.4	19	173	10340	143	<10.	111
L030071-009	19-Feb-03	RIO 3B	36	11	22	480	11560	387	<10.	246
L030071-010	19-Feb-03	RIO 3C	75	14	27	647	12120	1060	<10.	480
L030071-011	19-Feb-03	RIO 4A	114	77	31	1690	13800	971	<10.	1437
L030071-012	19-Feb-03	RIO 4B	199	107	21	2307	14700	1674	<10.	2052
L030071-013	19-Feb-03	RIO 4C	43	24	24	349	12800	277	<10.	402
L030071-014	19-Feb-03	RIO 5A	76	33	23	2179	19080	478	<10.	1238
L030071-015	19-Feb-03	RIO 5B	56	25	34	843	9795	283	<10.	523
L030071-016	19-Feb-03	RIO 6A	57	11	23	1763	17500	221	<10.	1109
L030071-017	19-Feb-03	RIO 6B1	19	4.5	38	27	7496	12	<10.	68
L030071-018	19-Feb-03	RIO 6B2	10	2.2	29	25	8144	15	<10.	42
L030071-019	19-Feb-03	RIO 6C	<10.	<2.0	45	31	8790	19	<10.	41
L030105-001	24-Feb-03	SMELTER	64	20	14	1432	13810	569	<10.	581

Table 2-6

Summary of Residential Soil Sampling Results
Phase IV Remedial Investigation

Sample Number	Date Sampled	Sample Location	Arsenic ppm	Cadmium ppm	Chromium ppm	Copper ppm	Iron ppm	Lead ppm	Selenium ppm	Zinc ppm
L020720-001	28-Aug-02	#1 0-1	15	9.8	41	457	13300	388	<10	486
L020720-002	28-Aug-02	#1 1-6	10	5.7	32	181	11300	209	<10	168
L030105-002	24-Feb-03	SMELTER	75	26	16	1186	14260	779	<10.	631
L030105-003	24-Feb-03	SMELTER	53	15	20	767	13770	513	<10.	423
L030105-004	24-Feb-03	SMELTER	42	15	17	1221	14600	385	<10.	486
L030105-005	24-Feb-03	SMELTER	50	14	28	725	12910	422	<10.	383
L030105-006	24-Feb-03	SMELTER	35	10	26	475	13110	309	<10.	280
L030105-007	03-Mar-03	2011 ST.V	174	4	13	175	11990	250	<10.	642
L030105-008	03-Mar-03	2011 ST.V	39	<2.0	21	285	12910	299	<10.	163
L030105-009	03-Mar-03	2011 ST.V	28	<2.0	22	109	14070	115	<10.	115
L030105-010	03-Mar-03	2011 ST.V	31	6.9	18	97	12920	136	<10.	188
L030105-011	03-Mar-03	2011 ST.V	13	<2.0	<10.	62	5027	34	<10.	133
L030105-012	03-Mar-03	2011 ST.V	32	2.6	20	236	14800	254	<10.	243
L030105-013	03-Mar-03	2011 ST.V	14	13	30	59	11580	107	<10.	151
L030105-014	26-Feb-03	2936 PIED	10	9.2	30	257	11920	375	<10.	424
L030105-015	26-Feb-03	2936 PIED	<10.	3.4	24	78	10330	63	<10.	73
L030105-016	26-Feb-03	2936 PIED	<10.	<2.0	29	24	10810	<10.	<10.	40
L030105-017	26-Feb-03	2936 PIED	14	5.6	32	248	10100	174	<10.	539
L030105-018	26-Feb-03	2936 PIED	16	7.4	29	246	9999	275	<10.	358
L030105-019	26-Feb-03	2936 PIED	13	7.6	29	167	8917	230	<10.	201
L030149-001	02-Apr-03	628 STEW	<10.	<2.0	48	48	6976	61	<10.	74
L030149-002	02-Apr-03	628 STEW	21	11	28	268	10110	475	<10.	340
L030149-003	02-Apr-03	628 STEW	21	9.5	25	195	10400	313	<10.	247
L030149-004	02-Apr-03	628 STEW	17	9.6	28	569	12130	422	<10.	676
L030149-005	02-Apr-03	628 STEW	37	16	31	597	11320	1023	<10.	871
L030149-006	02-Apr-03	628 STEW	31	13	34	376	10940	836	<10.	715
L030149-007	02-Apr-03	503 CLIFF	37	20	25	596	14740	979	<10.	819
L030149-008	02-Apr-03	503 CLIFF	30	10	27	280	14370	487	<10.	366
L030149-009	02-Apr-03	503 CLIFF	24	6.2	26	182	14200	280	<10.	229
L030149-010	02-Apr-03	503 CLIFF	34	8.5	24	278	14360	440	<10.	386
L030149-011	02-Apr-03	503 CLIFF	25	6.3	27	198	15640	299	<10.	286
L030149-012	02-Apr-03	503 CLIFF	20	3.9	24	122	15250	195	<10.	193
L030149-013	02-Apr-03	801 ARIZ	14	5.5	36	186	13230	470	<10.	596
L030149-014	02-Apr-03	801 ARIZ	30	15	34	374	13130	976	<10.	965
L030149-015	02-Apr-03	801 ARIZ	16	5.9	22	179	12880	476	<10.	507
L030149-016	07-Apr-03	606 W.MI	13	3.5	64	131	12680	210	<10.	259
L030149-017	07-Apr-03	606 W.MI	25	5.6	34	379	12530	335	<10.	399
L030149-018	07-Apr-03	606 W.MI	20	3.9	32	147	13320	325	<10.	345
L030177-001	22-Apr-03	1949 W.P	<10.	<2.0	33	24	8727	20	<10.	46
L030177-002	22-Apr-03	1949 W.P	22	6.7	20	240	12510	291	<10.	265
L030177-003	22-Apr-03	1949 W.P	10	7.6	22	155	14200	230	<10.	299
L030177-004	22-Apr-03	1949 W.P	14	4.5	23	513	13200	178	<10.	250
L030177-005	22-Apr-03	1949 W.P	<10.	5.1	16	258	14990	188	10	203
L030177-006	22-Apr-03	1949 W.P	14	2.4	27	149	16490	130	<10.	149
L030177-007	23-Apr-03	508 CLIFF	14	4.2	14	169	11770	229	<10.	236
L030177-008	23-Apr-03	508 CLIFF	13	3.9	22	128	9086	182	<10.	147
L030177-009	23-Apr-03	508 CLIFF	17	2.2	21	82	9413	108	<10.	97
L030177-010	23-Apr-03	508 CLIFF	<10.	<2.0	12	75	8412	51	<10.	107
L030177-011	23-Apr-03	508 CLIFF	<10.	<2.0	<10.	41	7057	65	<10.	77
L030177-012	23-Apr-03	508 CLIFF	12	5	14	164	9636	237	<10.	253
L030177-013	23-Apr-03	1415 N.FL	23	4.5	14	145	11020	202	<10.	220
L030177-014	23-Apr-03	1415 N.FL	22	<2.0	20	90	13070	92	<10.	114
L030177-015	23-Apr-03	1415 N.FL	22	3.4	14	118	11460	145	<10.	168

Table 2-6

Summary of Residential Soil Sampling Results
Phase IV Remedial Investigation

Sample Number	Date Sampled	Sample Location	Arsenic ppm	Cadmium ppm	Chromium ppm	Copper ppm	Iron ppm	Lead ppm	Selenium ppm	Zinc ppm
L020720-001	28-Aug-02	#1 0-1	15	9.8	41	457	13300	388	<10	486
L020720-002	28-Aug-02	#1 1-6	10	5.7	32	181	11300	209	<10	168
L030177-016	23-Apr-03	1415 N.FL	16	4.1	19	120	11980	209	<10.	341
L030177-017	23-Apr-03	1415 N.FL	20	2.2	14	64	13250	104	<10.	173
L030177-018	23-Apr-03	1415 N.FL	<10.	3	12	95	13360	159	<10.	308
L030177-019	23-Apr-03	1411 N.FL	10	3.6	13	109	11220	148	<10.	154
L030177-020	23-Apr-03	1411 N.FL	18	<2.0	14	28	13340	23	<10.	52
L030177-021	23-Apr-03	1411 N.FL	14	<2.0	15	30	13450	31	<10.	62
L030177-022	23-Apr-03	1411 N.FL	13	3.2	28	101	10070	146	<10.	154
L030177-023	23-Apr-03	1411 N.FL	24	3.4	14	77	14140	113	<10.	102
L030177-024	23-Apr-03	1411 N.FL	25	4	15	108	13070	143	<10.	136
L030177-025	23-Apr-03	1300 FEW	13	8.1	12	240	7678	511	<10.	392
	24-Jan-03	A (0-1) 10	<10.	<1.0	<10.	50	7070	<10.	<10.	26
	24-Jan-03	A (1-6) 10	<10.	<1.0	16	20	8535	14	<10.	30
	24-Jan-03	A (6-12) 1(	<10.	<1.0	11	10	5856	<10.	<10.	21
	24-Jan-03	B (0-1) 10	<10.	<1.0	19	16	5353	<10.	<10.	52
	24-Jan-03	B (1-6) 10	<10.	<1.0	<10.	<10.	5513	<10.	<10.	16
	24-Jan-03	B (6-12) 1(	<10.	<1.0	15	<10.	6483	<10.	<10.	19
	24-Jan-03	C (0-1) 10	<10.	<1.0	<10.	<10.	1759	<10.	<10.	16
	29-Jan-03	519 PROS	<10.	<1.0	25	<10.	7651	<10.	<10.	27
	29-Jan-03	519 PROS	<10.	<1.0	22	10	7594	<10.	<10.	26
	29-Jan-03	519 PROS	<10.	<1.0	<10.	<10.	6276	<10.	<10.	21
	28-Feb-03	4256 PAR	<10.	1.2	30	46	13660	39	<10.	156
	28-Feb-03	4256 PAR	10	<1.0	24	36	13640	36	<10.	123
	28-Feb-03	4256 PAR	<10.	<1.0	19	20	14450	21	<10.	67
	28-Feb-03	4256 PAR	<10.	<1.0	37	47	12100	40	<10.	118
	28-Feb-03	4256 PAR	<10.	<1.0	29	40	11550	37	<10.	94
	28-Feb-03	4256 PAR	<10.	<1.0	28	22	11580	25	<10.	56
	28-Feb-03	519 P. DIA	22	8.5	22	367	9863	393	<10.	465
	28-Feb-03	519 P. DIA	26	5.1	33	282	9823	315	<10.	250
	28-Feb-03	519 P. DIA	24	4	50	231	9504	258	<10.	200
	28-Feb-03	519 P. DIA	15	1.1	48	81	7763	77	<10.	66
	28-Feb-03	519 P. DIA	18	7.4	23	204	12800	296	<10.	301
	28-Feb-03	519 P. DIA	17	7.2	19	188	12030	267	<10.	257
	28-Feb-03	519 P. DIA	11	<1.0	17	36	8644	12	<10.	22
	28-Feb-03	4300 PAR	<10.	1.9	31	75	11290	98	<10.	147
	28-Feb-03	4300 PAR	13	2.2	35	73	12670	107	<10.	124
	28-Feb-03	513 P. DIA	19	7	24	277	10070	284	<10.	373
	28-Feb-03	513 P. DIA	20	10	35	276	9741	375	<10.	360
	28-Feb-03	513 P. DIA	10	4.8	40	127	9678	61	<10.	80
	28-Feb-03	513 P. DIA	17	10	42	210	9656	225	<10.	200
	28-Feb-03	513 P. DIA	16	7.7	31	253	8522	289	<10.	325
	28-Feb-03	513 P. DIA	17	8	49	254	7179	340	<10.	290
	28-Feb-03	513 P. DIA	20	10	35	201	7760	331	<10.	228
	28-Feb-03	1107 RIM	16	6.6	77	242	13030	239	<10.	291
	28-Feb-03	1107 RIM	24	7.7	91	245	13420	274	<10.	309
	28-Feb-03	1107 RIM	17	6.4	75	154	12730	212	<10.	182
	28-Feb-03	1107 RIM	<10.	<1.0	21	36	6186	36	<10.	52
	28-Feb-03	1107 RIM	26	7.9	81	267	12820	307	<10.	311
	28-Feb-03	1107 RIM	22	3.2	30	98	14240	103	<10.	109
	28-Feb-03	1015 MES	18	8.8	31	272	8992	340	<10.	306
	28-Feb-03	1015 MES	12	4.3	30	96	9112	134	<10.	96
	28-Feb-03	1015 MES	10	3.1	25	76	9190	100	<10.	74

Table 2-6

Summary of Residential Soil Sampling Results
Phase IV Remedial Investigation

Sample Number	Date Sampled	Sample Location	Arsenic ppm	Cadmium ppm	Chromium ppm	Copper ppm	Iron ppm	Lead ppm	Selenium ppm	Zinc ppm
L020720-001	28-Aug-02	#1 0-1	15	9.8	41	457	13300	388	<10	486
L020720-002	28-Aug-02	#1 1-6	10	5.7	32	181	11300	209	<10	168
	28-Feb-03	1015 MES	<10.	<1.0	16	30	9194	23	<10.	28
	28-Feb-03	1015 MES	29	14	27	524	11440	521	<10.	628
	28-Feb-03	1015 MES	13	5.8	24	143	9002	207	<10.	157
	28-Feb-03	1015 MES	<10.	2.1	29	67	8697	80	<10.	62
	28-Feb-03	1015 MES	19	11	19	341	11220	381	<10.	397
	28-Feb-03	1015 MES	14	3.9	21	107	9390	134	<10.	102
	28-Feb-03	1015 MES	13	1	21	51	9451	32	<10.	42
	28-Feb-03	912 MISS(	25	6.9	34	511	11240	792	<10.	379
	28-Feb-03	912 MISS(	24	6.7	46	335	9224	504	<10.	303
	28-Feb-03	912 MISS(	49	20	37	467	11050	569	<10.	407
	28-Feb-03	912 MISS(	74	300	35	776	10860	1098	<10.	705
	28-Feb-03	912 MISS(	28	12	31	506	8796	406	<10.	520
	28-Feb-03	912 MISS(	40	13	32	422	8904	533	<10.	388
	28-Feb-03	912 MISS(	26	6.3	23	242	8304	267	<10.	200
	28-Feb-03	912 MISS(	26	14	39	470	10010	527	<10.	540
	28-Feb-03	912 MISS(	32	14	39	521	9613	683	<10.	553
	28-Feb-03	912 MISS(	29	12	39	473	10200	513	<10.	515
	28-Feb-03	912 MISS(	30	16	43	444	10360	742	<10.	509
	28-Feb-03	1106 KEL	36	12	44	470	14520	474	<10.	685
	28-Feb-03	1106 KEL	34	12	40	381	13670	474	<10.	464
	28-Feb-03	1106 KEL	14	3	16	150	11820	121	<10.	104
	28-Feb-03	1106 KEL	15	5.3	22	270	10890	170	<10.	493
	28-Feb-03	1106 KEL	11	3.6	24	171	11280	129	<10.	232
	28-Feb-03	1106 KEL	14	3.5	28	123	13860	122	<10.	191
	28-Feb-03	1106 KEL	12	3.2	32	110	13840	110	<10.	173
	28-Feb-03	1019 KEL	13	4.1	25	170	10220	179	<10.	374
	28-Feb-03	1019 KEL	14	4.7	27	154	9954	210	<10.	314
	28-Feb-03	1019 KEL	<10.	3.9	18	95	10330	126	<10.	178
	28-Feb-03	1019 KEL	14	6.4	31	250	9329	224	<10.	371
	28-Feb-03	1019 KEL	17	10	27	286	8538	400	<10.	455
	28-Feb-03	1019 KEL	14	7.1	27	158	9646	192	<10.	193
		Count	339	339	339	339	339	339	339	339
		Min	10	1	10	10	1759	10	10	15
		Max	199	300	91	2307	24600	1674	10	2052
		Sd	22	21	11	289	3579	259	<10.	240
		Ave	26	9	24	247	11222	265	10	257

Table 4-1

Summary of Monitoring Well Construction Details
Phase IV Remedial Investigation

Well Name	Status	Location	Date Completed	Designation	Ground Surface Elevation (ft)	Measuring Point Elev. (ft)	Northing (ASARCO Grid)	Easting (ASARCO Grid)	Total Depth Drilled (ft bgs)	Total Depth Cased (ft)	Casing Size (ID) (in)	Screened Interval (ft bgs)	Static Water Level (ft bmp)
MONITORING WELLS													
EM-01		S of Antimony Plant behind security bldg.	5/10/1990		3784.00	3784.99	-2709.77	8665.22	250	83.5	4"	73.5-83.5	71.98
EM-02		Just south of Pond #1	5/11/1990		3774.56	3776.06	-3418.78	1369.54	82.5	80	4"	60-80	63.77
EM-03	ABANDONED	Near red fire house, east of Pond #1	5/14/1990		3776	3777.85	-3139.34	1414.63	28	not given	4"	not given	DRY
EM-04		Fourteen feet east of HP-12	5/15/1990		3771.9	3773.9	-3354.29	1125.18	115	115	4"	95-115	61.80
EM-05		Parking lot in front of warehouse	5/19/1990		3776.25	3776.5	-1900.26	1370.06	22	21	4"	11.0-21	14.56
EM-06		Parking lot in front of warehouse, 14' south of EM-5	5/20/1990		3776.22	3770.64	-1913.33	1371.17	91	90	4"	80-90	35.28
EM-07	DRY	Parking lot between engineering bldg and lab	5/19/1990		3772.91	3773.41	-1968.9	1651.7	15.5	N/A	N/A	5.0-15	
EM-08	ABANDONED	15' due east of pond #6	5/21/1990		3769.21	3769.46	-1730.19	1768.89	18	N/A	N/A	none	DRY
EP-01		35' downstream of canal tunnel	2/15/1990	Diesel #1	3724.21	3725.71	-3191.73	798.62	30	30	4"	10.0-30	19.00
EP-02	Auger refusal, abandoned hole, 2/16/90	Approx 200' downstream of canal tunnel along rail road tracks	2/16/1990	Diesel #1		N/A			6	N/A	N/A	N/A	N/A
EP-03		Approx 6' north of east canal tunnel	2/17/1990	Diesel #1	3719.45	3720.95	-3169.26	755.7	15	14.5	4"	4.5-14.5	10.00
EP-04		Approx. 30' from Rio Grande and 50' down from canal tunnel	2/1/1990	Phase I	3716.21	3718.27	-3381.67	722.46	8	8	2"	3.0-8	5.75
EP-05		Approx. 30' from Rio Grande and 250' down from canal tunnel	2/17/1990	Phase I	3714.67	3716.17	-3578.02	896.11	7	7	2"	2.0-7	6.31
EP-06		Approx. 30' from Rio Grande and 600' down from canal tunnel	2/18/1990	Phase I	3714.19	3716.69	-4379.21	1860.46	8	8	2"	3.0-8	7.48
EP-07		Approx. 50' from Rio Grande opposite of plant entrance	2/18/1990	Phase I	3714.05	3715.45	-4865.67	2804.41	8	8	2"	3.0-8	6.94
EP-08		Adjacent to north diesel tank	2/20/1990	Diesel #1		3774.84	-3029.06	1122.72	80	70	4"	50-70	76.00
EP-09	ABANDONED	Approx. 40' north of lunch house	2/20/1990	Diesel #1		3772.67	-3018.7	886.79	80	70	4"	50-70	not given
EP-10		50' East of building (diesel recovery system)	2/20/1990	Diesel #1	3772.32	3772.32	-3131.77	973.6	85	72	4"	52-72	not given
EP-11		Approx. 60' south of HP-10 and 150' south of lunch house	2/21/1990	Diesel #1	3771.02	3771.02	-3188.19	1014.43	80	69.5	4"	49.5-69.5	60.00
EP-12		200' Southeast of lunchroom	2/22/1990	Phase I and Diesel #1	3771.72	3773.22	-3353.8	1114.14	80	72	4"	52-72	62.00
EP-13		500' Northwest (upgradient) of lunchroom	2/23/1990	Phase I and Diesel #1	3776.47	3776.22	-2722.43	687.95	95	95	2"	45-95	50.25
EP-14		50' Northeast of lunchroom	2/24/1990	Phase I	3775.5	3775.25	-3017.52	988.36	78	70	4"	50-70	58.58
EP-15		Upgradient- between bedding, building and trestle	2/24/1990	Phase I and Diesel #1	3773.44	3773.19	-2801.96	1252.59	78	72	2"	52-72	58.22
EP-16	BURIED	Near trench excavation below lunch house	2/25/1990			3774.65			35	35	4"	15-35	23.00
EP-17		Approx. 10' north of EP-1	2/25/1990	Diesel #1		3725.9	-3178.18	993.73	30	25	4"	15-25	17.00
EP-18		Approx. 740' south of canal tunnel	2/25/1990	Diesel #1		3725.28	-3776.24	1300.28	31	30	4"	10.0-30	not given
EP-19		Approx 280' south of canal tunnel	2/25/1990	Diesel #1		3725.63	-3400.81	960.85	30	30	4"	10.0-30	10.00
EP-20		Approx. 1370' south of canal tunnel	2/26/1990	Phase I and Diesel #1	3724.8	3724.55	-4166.65	1873.2	30	30	4"	10.0-30	14.39
EP-21		18' North of 18,000 gallon diesel	5/21/1990	Phase I and Diesel #2	3776.62	3778.62	-1127.39	851.21	51	51	4"	31-51	27.80
EP-22				Phase I		3776.23			55	50	4"	20-50	36.50
EP-22R		Northwest of above ground storage tank	8/6/1990 redrilled Dec 1999	Phase I		3787.82			66	66	4"		52.00
EP-23		50' South of Northeast stack	8/7/1990	Phase I and Diesel #2	3373.32	3775.32	-1307.48	842.05	50	49	2"	29-49	24.37
EP-24		Near nordcast corner of Anode building	8/8/1990	Phase I and Diesel #2	3772.87	3774.87	-1536.51	888	58	55	2"	25-55	34.56
EP-25		Approx. 50 yards northeast of ASARCO stack	8/8/1990	Phase I and Diesel #2	3785	3786.72	-1205.43	515.2	70	70	2"	40-70	47.88
EP-26		South of the old Wedge Roaster	8/9/1990 redrilled 2000 ?	Phase I and Diesel #2		3773.43							

Table 4-1

Summary of Monitoring Well Construction Details
Phase IV Remedial Investigation

Well Name	Status	Location	Date Completed	Designation	Ground Surface Elevation (ft)	Measuring Point Elev. (ft)	Northing (ASARCO Grid)	Easting (ASARCO Grid)	Total Depth Drilled (ft bgs)	Total Depth Cased (ft)	Casing Size (ID) (in)	Screened Interval (ft bgs)	Static Water Level (ft bmp)
MONITORING WELLS													
EP-27	ABANDONED (prior to 1995)	Approx. 150 yards north of ASARCO stack	8/9/1990		3788				59	59	2"	29-59	
EP-28													
EP-29		Along rail road tracks at 33 + 95 ft reference points on canal wall	2/3/1991	Phase I and Diesel #1	3727.5	3727.25	-3159.57	777.86	58	37	4"	7.0-37	13.80
EP-30		Along rail road tracks at 34 + 50 foot reference points on canal wall	1/31/1991	Diesel #1		3726.34	-3222.5	826.94	38	37	4"	7.0-37	17.00
EP-31		Along rail road tracks at 35 + 20 foot reference points on canal wall	1/30/1990	Diesel #1		3726.02	-3262.52	856.68	39	37	4"	7.0-37	16.00
EP-32		Along rail road tracks at 35 + 65 ft reference points on canal wall	1/31/1991	Diesel #1		3725.97	-3295.83	880.82	38.5	37	4"	7.0-37	20.00
EP-33		Along rail road tracks at 36 + 05 foot reference points on canal wall	1/30/1991	Diesel #1		3726.26	-3326.16	903.76	37.5	37	4"	7.0-37	21.00
EP-34		Along rail road tracks at 36 + 50 foot reference points on canal wall	2/3/1991	Diesel #1		3725.93	-3363.7	931.51	38	37	4"	7.0-37	14.48
EP-35		Along rail road tracks at 37 + 42 foot reference points on canal wall	2/1/1991	Phase I and Diesel #1	3724	3725.74	-3434.68	985.98	37.5	37.5	4"	7.5-37.5	14.48
EP-36		Along rail road tracks at 37 + 85 foot reference points on canal wall	2/2/1991	Diesel #1		3725.52	-3470.1	1012.96	38	37	4"	7.0-37	24.00
EP-37		Along rail road tracks at 38 + 25 foot reference points on canal wall	2/2/1991	Diesel #1		3725.6	-3504.32	1038.81	37.5	34.5	4"	4.5-34.5	22.00
EP-38		Along rail road tracks at 38 + 68 foot reference points on canal wall	2/2/1991	Diesel #1		3725.6	-3537.38	1063.05	38	37	4"	7.0-37	20.00
EP-39		Along rail road tracks at 39 + 55 foot reference points on canal wall	2/1/1991	Diesel #1		3725.95	-3601	1117.78	38	37	4"	7.0-37	
EP-40		Along rail road tracks at 40 + 40 foot reference points on canal wall	2/1/1991	Diesel #1		3725.7	-3659.57	1170.1	38	37	4"	7.0-37	21.00
EP-41													
EP-42		Along rail road tracks at 43 + 05 foot reference points on canal wall	1/31/1991	Diesel #1		3726.15	-3832.98	1368.51	37.5	37	4"	7.0-37	21.00
EP-43		Waste water tank area, 30' West and 30' South of Southwest corner of lunch house	2/4/1991	Phase I and Diesel #1	3771	3772.17	-3155.8	941.97	90	88	4"	58-88	60.75
EP-44		35' East of EP-43	2/6/1991	Diesel #1		3771.74	-3187.76	954.78	80	80	4"	50-80	55.00
EP-45		81' East of EP-43, east of lunch house	2/4/1991	Diesel #1		3771.81	-3229.36	974.25	83	79	4"	49-79	65.00
EP-46		44' East of EP-45, 63' south of compressor/treatment bldg	2/5/1991	Diesel #1		3772.04	-3265.62	998.16	80	79	4"	49-79	70.00
EP-47		56' North of EP-43 on North side of Lunchroom	2/4/1991	Diesel #1		3773.93	-3062.9	891.87	80	79	4"	49-79	67.00
EP-48		Along rail road tracks at 33+ 55 foot reference points on canal wall	2/5/1991	Diesel #1		3726.11	-3123.12	751.89	38	37	4"	7.0-37	31.00
EP-49		Plant area near acid plant at Northwest end of plant	2/9/1991	Phase I and Diesel #1	3785.84	3785.59	-973.41	148.55	71	69	4"	39-69	63.53
EP-50		86' East of EP-46, approx. 80' North of EP-12, east of lunchroom	2/11/1991	Diesel #1		3772.25	-3302.82	1025.8	81	78	4"	48-78	65.00
EP-51		Plant site south of stack edge of property	2/12/1991	Phase I and Diesel #2	3774.91	3774.66	-1561.9	289.07	71	70	4"	40-70	48.73
EP-52		75' Northwest of ASARCO stack (edge)	2/13/1991	Phase I and Diesel #2	3786	3787.38	-1266.09	370.54	71	70	4"	40-70	48.10
EP-53		In slag dump, up gradient from EP-22	2/14/1991	Phase I and Diesel #2		3805.64	-749.31	1106.46	81	79	2"	59-79	67.15