SWR 31235

# ASARCO EL PASO COPPER SMELTER
# PHASE III REMEDIAL INVESTIGATION REPORT
# EL PASO, TEXAS

Prepared For:

ASARCO

2301 West Paisano Drive
El Paso, Texas 79922

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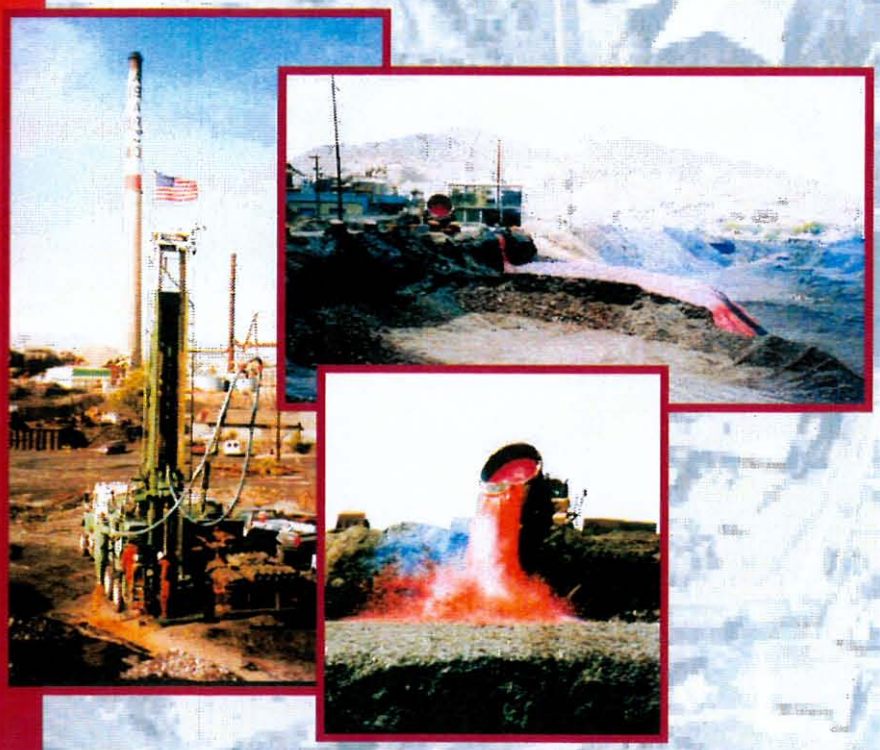
Corrective Action Section

Prepared By:

Hydrometrics, Inc.®
consulting scientists, engineers and contractors



**VOLUME**
**I of V**

November 2001

ASARCO

SWR # 31235

CAS DOC # 14721

PROJ. MGR Brad N.

El Paso Plant
L. W. Castor, Unit Manager

November 19, 2001

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REMEDIATION DIVISION
Corrective Action Section

Mr. Brad Wilkinson, Project Manager
Team One, Corrective Action Section
Remediation Division
Texas Natural Resource Conservation Commission
P.O. Box 13087
Austin, Texas 78711-3087

**Re: Phase III Remedial Investigation Report Submittal**
**Asarco Incorporated, El Paso Facility**
**Agreed Order Docket No. 96-0212-MLM-E**
**TNRCC Industrial Solid Waste Registration No. 31235**

Dear Mr. Wilkinson:

As required by ordering provisions 6 and 9 of the above referenced Agreed Order, enclosed are two copies of the Remedial Investigation Phase III Report for the El Paso Facility of Asarco Incorporated. This Phase III Report includes the results of Closed-Plant evaluations, pursuant to our request of June 14, 2001 and approved by TNRCC on July 10, 2001.

Do not hesitate to contact me at (915) 541-1819, if you have any questions regarding this submittal.

Sincerely,

Larry A. Johnson
Environmental Manager

cc: Archie Clouse - TNRCC, El Paso (1)
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# ASARCO EL PASO COPPER SMELTER
# PHASE III REMEDIAL INVESTIGATION REPORT
# EL PASO, TEXAS

## EXECUTIVE SUMMARY

## INTRODUCTION

Pursuant to and in accordance with an Agreed Order with the Texas Natural Resource Conservation Commission (Docket No. 96-0212-MLM-E; TNRCC, 1996), ASARCO Incorporated (Asarco) through its contractor Hydrometrics, conducted a Remedial Investigation (RI) for the Asarco Copper Plant in El Paso, Texas.

The Copper Plant is located within the city limits of El Paso, Texas, adjacent to the Rio Grande River (Rio Grande). In accordance with TNRCC requirements and the RI Work Plan (Hydrometrics 1996), soil, groundwater and surface water were characterized (sampled, tested and analyzed) for physical and inorganic (primarily trace metal) chemical parameters. Based on characterization data, potential risks and corrective measures associated with metals in soil, groundwater and surface water were evaluated.

The RI was conducted in three phases; Phase I in 1997-1998, Phase II in 1999-2000, and Phase III in 2001. Phase I and Phase II RI efforts focused on on-Plant investigation areas, and the results were presented in the Phase I (Hydrometrics 1998) and Phase II (Hydrometrics 2000) RI Reports. Phase III RI efforts supplement earlier investigation efforts and include additional on-Plant and off-Plant investigation areas. The Phase III RI data are presented in this Phase III RI report, with a cumulative summary of the Phase I and Phase II data.

## SOILS

Soils in the Copper Plant area are a mix of colluvial and fluvial sediments, with areas of extensive man-deposited fill consisting of slag, soil and other man made (typically building or other smelter production by-product) materials. Primary soil Constituents of Concern (COCs) are arsenic, cadmium and lead, which are associated with historic smelter operations, as well as occurring naturally in the general area. In the on-Plant investigation areas, soil COC concentrations are generally highest near the ground surface, and generally decrease with depth. On-Plant soil concentrations are variable and appear to show influences and association with past Plant operation practices. As a result, near surface Plant COC concentrations, as well as some subsurface soil concentrations, are elevated above local background levels.

Off-Plant soils were investigated by both Asarco (Hydrometrics Phase III RI), and by the Environmental Protection Agency (EPA). The Asarco off-Plant investigation efforts focused on open areas adjacent to the Plant including "Smeltertown" located between the Plant areas and the Rio Grande, and open areas north and east of the Plant (La Calavera and east of I-10). Soil sample results in these areas show elevated arsenic and metals in near surface (1 to 3 feet below ground surface (bgs)) samples. Asarco also collected samples in adjacent residential areas north of the Plant (La Calavera). Sample results are variable with generally elevated near surface arsenic and lead concentrations nearest the Plant and decreasing concentrations with distance from the Plant.

EPA investigation efforts include several locations throughout the El Paso area including a residential area immediately adjacent north of the Plant (La Calavera). At the time of this writing EPA is in the process of evaluating their data; however, a review of the data show COC concentrations range from slightly elevated near-Plant boundary areas to apparent urban background levels over most of the EPA sample area.

## GROUNDWATER

A shallow aquifer occurs beneath the Asarco Facility that is separated from any regional aquifer and associated groundwater use. The aquifer beneath the Plant is classified as brackish according to relatively high Total Dissolved Solids (TDS) concentrations.

The RI groundwater investigation included installation and testing of 67 monitoring wells. These wells supplemented 35 existing monitoring wells installed as part of previous Plant investigation efforts. All existing and RI monitoring wells were sampled and analyzed for water quality during the RI.

### Stratigraphy

Stratigraphic units at the El Paso Plant generally consist of man-placed fill underlain by alluvial and colluvial deposits, which in-turn are underlain by bedrock composed of Tertiary age andesite and Cretaceous age sandstones, shales, limestones and siltstones. Water bearing strata under the Plant consist of alluvial and colluvial deposits of mixed sand, gravel, boulders and bedrock. In the on-Plant area, ephemeral drainage arroyos have cut into colluvial and bedrock strata and probably influence groundwater flow from upland Plant areas toward Rio Grande flood plain alluvial deposits and the Rio Grande. Arroyos in on-Plant areas have been backfilled with man-deposited soil, slag and other smelter production by products and building debris. Rio Grande alluvial deposits (near Smeltertown west and adjacent to the Plant) consist of reworked colluvial and terrace deposits, and are composed predominately of sands, silts and clays in the upper 20 feet of the deposits.

### Water Level Data

Depth to groundwater in on-Plant areas is 40 to 60 feet bgs depending on the location. On the Rio Grande flood plain west and adjacent to the Plant, the depth to groundwater is about 10 feet bgs. Groundwater flow in the Plant area is generally from the east-northeast to the west-southwest toward the Rio Grande flood plain and river. Seasonal variations in river stage affect groundwater flow at the river's edge, with flow toward the river during low stage periods, and flow more parallel to the river during high stage

periods when the river is higher than immediately adjacent flood plain alluvial groundwater levels.

**Groundwater Quality**

Water quality sampling results show the Plant area shallow groundwater system has elevated concentrations of arsenic, cadmium, lead and selenium and to a lesser degree other metals including copper and zinc. Concentrations of sulfate and TDS are also elevated with TDS concentration ranging from 3000 milligrams/liter (mg/l) to 10,000 mg/l; the water quality is classified as brackish. Groundwater in the facility is not used for drinking water supply purposes.

Of the elements analyzed, arsenic, cadmium and lead are considered the primary groundwater COCs. Arsenic concentrations were elevated above drinking water Maximum Contaminant Limits (MCLs) through out the western portion of the Plant area groundwater. Cadmium and lead also exceed MCLs at some locations on the Plant, but are generally less mobile in groundwater than arsenic, and elevated concentration are limited to a few point source locations on the Plant.

Highest arsenic and metal concentrations occur in locations adjacent to the Acid Plant and acid storage tank areas, and areas adjacent and downgradient of former process water ponds. Locally, on-Plant process fluid losses from process lines, drains and sumps have likely also contributed arsenic and metals to groundwater.

While cadmium and lead concentrations are generally elevated only near on-Plant source areas, arsenic concentrations are also elevated at down-gradient locations in the Rio Grande flood plain aquifer adjacent to the Plant. Groundwater contaminant fate and transport simulations suggest arsenic could impact down gradient alluvial aquifers and the Rio Grande if on-Plant source areas are not removed or isolated as sources of arsenic to the groundwater system.

## SURFACE WATER

The primary surface water features in the Plant area include the Rio Grande, which borders the site to the west and south; and the American Canal, a concrete lined channel located between the Plant and the river, which diverts water from the Rio Grande to the city of El Paso. On-Plant surface water features include three unlined process water ponds, two storm water collection ponds, and five ephemeral drainage arroyos.

Rio Grande designated water uses by TNRCC are Domestic Water Supply, Non-Contact Recreational and Limited Aquatic Life. Flow in the river is dam controlled with higher flows released during summer months (April to September). During high flow conditions, the river is generally a losing stream with localized water lost to flood plain alluvium. During low flow conditions, the river gains water from flown plain alluvial deposits.

Water sampling results show river water quality is generally a sodium sulfate type with moderately high concentrations of TDS, chloride and nutrients. Arsenic, cadmium and lead are typically below drinking water MCLs. Samples of sediment COCs also typically show low concentrations of arsenic, cadmium, and lead.

The American Canal, which diverts water from the Rio Grande just west of the Plant, has similar general water quality characteristics as the Rio Grande. RI sampling results show water quality generally meets MCLs for investigation COCs, with one minor temporary exceedance for lead during a short-term extreme low flow condition during year 2000.

Water quality sampling results from on-Plant ponds generally show high concentrations of TDS, sodium sulfate, chloride and nutrients. Concentrations of metals are also typically high and are well above MCLs for investigation COCs, and these ponds have been identified as sources of arsenic and metals to the groundwater system underlying the Plant.

## HUMAN HEALTH RISKS

A Base Line Risk Assessment (BLRA) was conducted to evaluate existing on-Plant and off-Plant human health risks associated with existing exposure to arsenic and other constituents on and adjacent to the Plant. The objective of the BLRA is to establish corrective action objectives based on an understanding of risks and regulatory requirements; particularly TNRCC risk reduction standards.

### On-Plant Baseline Risk

An on-Plant baseline risk assessment was completed during the Phase I RI (1998). The Phase I BLRA is augmented in this Phase III report. The supplemental evaluation included examination of on-Plant exposure settings, pathways, contamination sources, transport mechanisms, receptor contact mechanisms and intake. On-Plant exposures based on on-Plant COC concentrations in soil, groundwater and surface water were compared to applicable standards per published TNRCC guidelines. In general these guidelines were: soil risk levels for ingestion that reduce risks to less than one in one million ($1 \times 10^{-6}$); groundwater constituents below MCLs; and surface water standards based on human consumption of aquatic life and fresh water standards for aquatic life. Based on the TNRCC guidelines, the following risk based standards were determined:

| Parameter | Surface Soil | | Groundwater | Surface Water | |
|---|---|---|---|---|---|
| | Soil/Air Ingestion - Industrial Use | Soil/Air Ingestion - Residential Use | MCLs for Drinking Water - SWDA | Human Health for Water and Fish Consumption | Fresh Water Chronic Criteria for Aquatic Life |
| | mg/kg | | Mg/l | mg/l | |
| Arsenic | 200 | 20 | 0.05 | NA | 0.190 |
| Cadmium | 410 | 120 | 0.005 | 0.01 | 0.002 |
| Chromium | 230,000 | 5,300 | 0.1 | 33 | 0.377 |
| Copper | 74,000 | 10,000 | 1.3 | NA | 0.027 |
| Iron | NA | NA | 0.3 | NA | NA |
| Lead | 1,600 | 500 | 0.015 | NA | 0.008 |
| Selenium | 9,200 | 1,300 | 0.05 | 0.104 | 0.005 |
| Zinc | 410,000 | 59,000 | 5.0 | NA | 0.227 |
| Nitrates | NA | NA | 10 | NA | NA |

Notes NA: Not Applicable

Based on the determined risk standards, existing on-Plant controls were evaluated and potential new controls were developed and refined as corrective measures for the Plant.

**Off Plant Baseline Risk**

Off-Plant baseline human health risks are presently being evaluated by both Asarco (Hydrometrics Phase III RI), and by the EPA.

The Asarco off-Plant risk evaluation efforts focused on open areas adjacent to the Plant including "Smeltertown" located between the Plant areas and the Rio Grande, and open areas of La Calavera, located west of the Plant adjacent to slag storage areas.

Since elevated surface soil metals in the La Calavera area are most likely result of transported slag particles from near by slag storage areas, the bio-availability of metals from the slag was determined by laboratory testing. The results showed that 5.1 percent of lead and 11.1 percent of arsenic in slag-impacted soils is bio-available. As a result site-specific standards (higher than residential standards for arsenic and lead shown above), based on bio-availability test results for the La Calavera area, are anticipated.

At the time of this writing, EPA is in the process of evaluating their soil investigation data; however, following a review of the data by the Agency for Toxic Substances and Disease Registry (El Paso Times 2001) ATSDR determined the soil concentrations were no health threat.

## CORRECTIVE MEASURES

Based on RI characterization data and evaluation, the BLRA, and on TNRCC Risk Reduction Rule Standard No. 3 (Closure/Remediation with Controls) corrective action objectives were developed. These are:

- Reduce the potential for metals exposure to Plant workers and the public
- Minimize the potential for transport of metals to groundwater
- Prevent increases of metal concentrations in the American Canal and the Rio Grande.

In general, the proposed corrective measures for the El Paso Plant consist of engineering controls, institutional controls, and groundwater and surface water monitoring programs.

**Engineering Controls**

Proposed engineering controls include: surface water runoff controls, surface soil capping, and removal/disposal actions.

Several surface water controls have already been implemented (1999 and previous) including installation of a lined impoundment for storm water collection, and installation of lined sumps, pumping systems, pipelines and storage tanks. At the same time, the three process water ponds identified as sources of COCs to groundwater were decommissioned. This action eliminates the ponds as a mechanism to contribute and transport COCs in groundwater. In addition to these actions, supplemental Plant operational controls were implemented to minimize discharges from Plant operation components. These actions have had a positive effect on Plant groundwater with decreased of COC concentrations in the areas where these actions were implemented.

Engineering controls that address soil containment or removal actions address two source area soil/material Categories (I, II), based on metal concentrations, degree of potential toxicity, distribution and volume of materials, associated Plant processes, visual characteristics and impacts to water resources. Category I are residual byproducts from current and past smelter operations and are associated with elevated concentrations of metals in underlying groundwater. Category II materials are large volumes of diluted residual by-products (most of the same materials listed as Category I) and debris from demolition of smelter facilities with residual concentrations of metals (Category II materials do not currently represent a source of metals to the underlying groundwater).

Capping actions consist of covering identified source areas containing Category II materials with an engineered barrier to inhibit infiltration of surface water through

smelter materials. Depending on the location and post-remediation use capping materials include asphalt, concrete, geomembrane liners and/or clean soil/vegetation cover.

Removal/disposal actions will be performed as appropriate on Category I materials, which will be excavated and incorporated into an on-site disposal cell. The on-Site disposal cell construction includes a bottom liner, a leachate collection system and a lined cover and will be constructed in accordance with TNRCC landfill siting and construction criteria.

**Institutional Controls**

Proposed institutional controls include: worker health and safety programs, municipal restrictions on groundwater use, deed restrictions, fencing and other access controls, and dust suppression. Worker health and safety programs include required OSHA training and medical monitoring, and testing for lead, cadmium and arsenic. Municipal restrictions and deed restrictions would provide legal restriction on groundwater and site use during Plant operation and after any Plant closure.

**Groundwater and Surface Water Monitoring Program**

A post-RI groundwater and surface water program will be prepared to help monitor groundwater and surface water conditions during corrective measure activities, and to monitor the effect of implemented corrective measures on groundwater and surface water systems.

| Well Name | Status | Location | Date Completed | Designation |
|---|---|---|---|---|
| MONITORING WELLS | | | | |
| | | | | |
| EM-01 | | S of Antimony Plant behind security bldg. | 5/10/90 | |
| EM-02 | | Just south of Pond #1 | 5/11/90 | |
| EM-03 | ABANDONED | Near red fire house, east of Pond #1 | 5/14/90 | |
| EM-04 | | Fourteen feet east of EP-12 | 5/15/90 | |
| EM-05 | | Parking lot in front of warehouse | 5/19/90 | |
| EM-06 | | Parking lot in front of warehouse, 14' south of EM-5 | 5/20/90 | |
| EM-07 | DRY | Parking lot between engineering bldg and lab | 5/19/90 | |
| EM-08 | ABANDONED | 15' due east of pond #6 | 5/21/90 | |
| EP-01 | | 35' downstream of canal tunnel | 2/15/90 | Diesel #1 |
| EP-02 | Auger refusal, abandoned hole, 2/16/90 | Approx 200' downstream of canal tunnel along rail road tracks | 2/16/90 | Diesel #1 |
| EP-03 | | Approx 6' north of east canal tunnel | 2/17/90 | Diesel #1 |
| EP-04 | | Approx. 30' from Rio Grande and 50' down from canal tunnel | 2/1/90 | Phase I |
| EP-05 | | Approx. 30' from Rio Grande and 250' down from canal tunnel | 2/17/90 | Phase I |
| EP-06 | | Approx. 30 ' from Rio Grande and 600' down from canal tunnel | 2/18/90 | Phase I |
| EP-07 | | Approx. 50' from Rio Grande opposite of plant entrance | 2/18/90 | Phase I |
| EP-08 | | Adjacent to north diesel tank | 2/20/90 | Diesel #1 |
| EP-09 | ABANDONED | Approx. 40' north of lunch house | 2/20/90 | Diesel #1 |
| EP-10 | | 50' East of building (diesel I recovery system) | 2/20/90 | Diesel #1 |
| EP-11 | | Approx. 60' south of EP-10 and 150' south of lunch house | 2/21/90 | Diesel #1 |
| EP-12 | | 200' Southeast of lunchroom | 2/22/90 | Phase I and Diesel #1 |
| EP-13 | | 500' Northwest (upgradient) of lunchroom | 2/23/90 | Phase I and Diesel #1 |
| EP-14 | | 50' Northeast of lunchroom | 2/24/90 | Phase I |
| EP-15 | | Upgradient- between bedding, building and trestle | 2/24/90 | Phase I and Diesel #1 |
| EP-16 | BURIED | Near trench excavation below lunch house | 2/25/90 | |
| EP-17 | | Approx. 10' north of EP-1 | 2/25/90 | Diesel #1 |
| EP-18 | | Approx. 740' south of canal tunnel | 2/25/90 | Diesel #1 |
| EP-19 | | Approx 280' south of canal tunnel | 2/25/90 | Diesel #1 |
| EP-20 | | Approx. 1370' south of canal tunnel | 2/26/90 | Phase I and Diesel #1 |
| EP-21 | | 18' North of 18,000 gallon diesel | 5/21/90 | Phase I and Diesel #2 |
| EP-22 | | | | Phase I |
| EP-22R | | Northwest of above ground storage tank | 8/6/1990 redrilled Dec 1999 | Phase I |
| EP-23 | | 50' South of Northeast stack | 8/7/90 | Phase I and Diesel #2 |
| EP-24 | | Near northeast corner of Anode building | 8/8/90 | Phase I and Diesel #2 |
| EP-25 | | Approx. 50 yards northeast of ASARCO stack | 8/8/90 | Phase I and Diesel #2 |
| EP-26 | | South of the old Wedge Roaster | 8/9/1990 redrilled 2000 ? | Phase I and Diesel #2 |
| EP-27 | ABANDONED (prior to 1995) | Approx. 150 yards north of ASARCO stack | 8/9/90 | |
| EP-28 | | | | |
| EP-29 | | Along rail road tracks at 33 + 95 ft reference points on canal wall | 2/3/91 | Phase I and Diesel # |
| EP-30 | | Along rail road tracks at 34 + 50 foot reference points on canal wall | 1/31/91 | Diesel #1 |

| Well Name | Status | Location | Date Completed | Designation |
|---|---|---|---|---|
| MONITORING WELLS | | | | |
| EP-31 | | Along rail road tracks at 35 + 20 foot reference points on canal wall | 1/30/90 | Diesel #1 |
| EP-32 | | Along rail road tracks at 35 + 65 ft reference points on canal wall | 1/31/91 | Diesel #1 |
| EP-33 | | Along rail road tracks at 36 + 05 foot reference points on canal wall | 1/30/91 | Diesel #1 |
| EP-34 | | Along rail road tracks at 36 + 50 foot reference points on canal wall | 2/3/91 | Diesel #1 |
| EP-35 | | Along rail road tracks at 37 + 42 foot referene points on canal wall | 2/1/91 | Phase I and Diesel #1 |
| EP-36 | | Along rail road tracks at 37 + 85 foot referene points on canal wall | 2/2/91 | Diesel #1 |
| EP-37 | | Along rail road tracks at 38 + 25 foot referene points on canal wall | 2/2/91 | Diesel #1 |
| EP-38 | | Along rail road tracks at 38 + 68 foot referene points on canal wall | 2/2/91 | Diesel #1 |
| EP-39 | | Along rail road tracks at 39 + 55 foot referene points on canal wall | 2/1/91 | Diesel #1 |
| EP-40 | | Along rail road tracks at 40 + 40 foot referene points on canal wall | 2/1/91 | Diesel #1 |
| EP-41 | | | | |
| EP-42 | | Along rail road tracks at 43 + 05 foot referene points on canal wall | 1/31/91 | Diesel #1 |
| EP-43 | | Waste water tank area, 30' West and 30' South of Southwest corner of lunch house | 2/4/91 | Phase I and Diesel #1 |
| EP-44 | | 35' East of EP-43 | 2/6/91 | Diesel #1 |
| EP-45 | | 81' East of EP-43, east of lunch house | 2/4/91 | Diesel #1 |
| EP-46 | | 44' East of EP-45, 63' south of compressor/treatment bldg | 2/5/91 | Diesel #1 |
| EP-47 | | 56' North of EP-43 on North side of Lunchroom | 2/4/91 | Diesel #1 |
| EP-48 | | Along rail road tracks at 33+ 55 foot reference points on canal wall | 2/5/91 | Diesel #1 |
| EP-49 | | Plant area near acid plant at Northwest end of plant | 2/9/91 | Phase I and Diesel #1 |
| EP-50 | | 86' East of EP-46, approx. 80' North of EP-12, east of lunchroom | 2/11/91 | Diesel #1 |
| EP-51 | | Plant site south of stack edge of property | 2/12/91 | Phase I and Diesel #2 |
| EP-52 | | 75' Northwest of ASARCO stack (edge) | 2/13/91 | Phase I and Diesel #2 |
| EP-53 | | In slag dump, up gradient from EP-22 | 2/14/91 | Phase I and Diesel #2 |
| EP-54 | | Northwest corner of Acid Plant | 2/9/94 | Phase I and Diesel #2 |
| EP-55 | | 200' West of EPS2 | 2/9/94 | Phase I and Diesel #2 |
| EP-56 | | South of GPS house | 2/9/94 | Phase I and Diesel #2 |
| EP-57 | | Old Smelter Town | 1/16/94 | Phase I and Diesel # |
| EP-58 | | Old Smelter Town | 6/16/94 | Phase I and Diesel # |
| EP-59 | | Old Smelter Town | 1/17/94 | Phase I and Diesel # |
| EP-60 | | Old Smelter Town | 1/17/94 | Phase I and Diesel # |
| EP-61 | | None Given | 1/18/94 | Phase I and Diesel # |
| EP-62 | | Old Smelter Town | 1/25/94 | Phase I and Diesel # |
| EP-63 | | Old Smelter Town | 1/26/94 | Phase I and Diesel # |

**Summary of Mon**
**ASARCO EL Pa**

| Well Name | Status | Location | Date Completed | Designation |
|---|---|---|---|---|
| **MONITORING WELLS** | | | | |
| EP-64 | | Old Smelter Town | 1/25/94 | Phase I and Diesel #2 |
| EP-65 | | Old Smelter Town | 1/27/94 | Phase I and Diesel #2 |
| EP-66 | | Old Smelter Town | 1/27/94 | Phase I and Diesel #2 |
| EP-67 | | Truck Staging Area | 5/28/97 | Phase I |
| EP-68 | | South end of employees parking | 5/29/97 | Phase I |
| EP-69 | ABANDONED | East of Scale House | 5/29/97 | Phase I |
| EP-70 | | Northwest of Rubber Lake | 5/30/97 | Phase I |
| EP-70R | | 70' West of EP-70 | 6/12/97 | Phase I |
| EP-71 | | Central Rail Yard | 5/31/97 | Phase I |
| EP-71R | | Near Gate 18 | 6/11/97 | Phase I |
| EP-72 | | East Central Storage Yard | 6/1/97 | Phase I |
| EP-72R | | East Central Storage Yard | 6/1/97 | Phase I |
| EP-73 | | East of Acid Plant 2 | 6/1/97 | Phase I |
| EP-74 | ABANDONED | Lead Works | 6/2/97 | Phase I |
| EP-75 | | Boneyard | 6/3/97 | Phase I |
| EP-76 | | Boneyard | 6/3/97 | Phase I |
| EP-77 | | North of Pond 5 | 6/4/97 | Phase I |
| EP-78 | | Near Pond on Parker Bros. | 6/4/97 | Phase I |
| EP-79 | | Southwest of Cemetary | 6/5/97 | Phase I |
| EP-80 | | ASARCO Annex 2 | 6/6/97 | Phase I |
| EP-81 | | Parker Bros. Entrance | 6/6/97 | Phase I |
| EP-82 | | East of Plant; West of I-10; South of Parker Brothers | 6/10/97 | Phase I |
| EP-83 | | 200' North of # Bridge | 6/11/97 | Phase I |
| EP-84 | | 1000' East of I-10 | 6/11/97 | Phase I |
| EP-85 | | In Arroyo due North of Cadmium Bldg. | 6/12/97 | Phase I |
| EP-86 | | Slag pile Norh of Cemetary | 6/13/97 | Phase I |
| EP-87 | ABANDONED | North Arroyo | 6/16/97 | Phase I |
| EP-88 | | North of Pond #6 | 6/17/97 | Phase I |
| EP-89 | | Abandoned Guard Shackj | 6/18/97 | Phase I |
| EP-90 | | Lead Works | 12/8/97 | Phase I |
| EP-93 | | East of I-10, center of Terrace | 7/21/99 | Phase II |
| EP-94 | | East of I-10, on west toe of Terrace | 7/26/99 | Phase II |
| EP-95 | | East of I-10, center of North Arroyo | 10/20/99 | Phase II |
| EP-96 | | East of I-10, east side of Terrace | 7/20/99 | Phase II |
| EP-97 | | East of I-10, conter of South Arroyo, in pasture area. | 8/4/99 | Phase II |
| EP-98 | | East of I-10, northwest edge of South Arroyo, on slag area | 8/9/99 | Phase II |
| EP-99 | | Slag Pour area, north end of boneyard | 5/12/99 | Phase II |
| EP-100 | | 10 feet south of Medford Sump | 9/28/99 | Phase II |

| Well Name | Status | Location | Date Completed | Designation |
|---|---|---|---|---|
| **MONITORING WELLS** | | | | |
| EP-101 | | West of Sample Mill Area Unloading Building | 9/30/99 | Phase II |
| EP-102 | | 5 ft. south of Sample Mill Area Sump | 10/4/99 | Phase II |
| EP-103 | | Center of overhead conveyor btwn delumper & bedding bldg. | 10/5/99 | Phase II |
| EP-104 | | 30' E, and 50' S of southwest corner of bedding bldg | 10/7/99 | Phase II |
| EP-105 | | 125' NW of Northeast corner of unloading bldg | 10/8/99 | Phase II |
| EP-106 | | 30' NW of Plant Flag Pole at entrance | 10/18/99 | Phase II |
| EP-107 | | 50' W and 250' S of Southeast corner of unloading building | 10/12/99 | Phase II |
| EP-108 | | Center-line of ephemerial pond, approx. 400' E of railroad tracks | 10/14/99 | Phase II |
| EP-109 | | South of #9 gate roadway, 200' E of railroad tracks | 10/15/99 | Phase II |
| EP-110 | | N side of plant entrance roadway, 30' NE of plant RR bridge spur | 10/18/99 | Phase II |
| EP-111 | | 525' NE of Old pump house on Rio Grande flood plain | 10/27/99 | Phase II |
| EP-112 | | 1400' NW of Old Pump house on Rio Grande flood plain | 10/27/99 | Phase II |
| EP-113 | | 2300' NW of Old Pump house on Rio Grande flood plain | 10/28/99 | Phase II |
| EP-114 | | Front Slope, by RR tracks, below Acid Mist Precipitator | 11/15/99 | Phase II |
| EP-115 | | Front Slope, by RR tracks, below Medford Sump | 11/16/99 | Phase II |
| EP-116 | | Front Slope, by RR tracks, below former roasters | 11/16/99 | Phase II |
| EP-117 | | Front Slope, by RR tracks, below Old Baghouse | 11/17/99 | Phase II |
| EP-118 | | Front Slope, by RR tracks, below Sample Mill Area | 11/17/99 | Phase II |
| EP-119 | | NW corner of Smeltertown | 4/2/01 | Phase III |
| EP-120 | | Arroyo West of Ephemeral Pond | 4/9/01 | Phase III |
| EP-121 | | Arroyo West of Ephemeral Pond | 4/12/01 | Phase III |
| EP-122 | | West of Paisano, North of IBWC | 4/12/01 | Phase III |
| EP-123 | | North of Ephemeral Pond | 4/18/01 | Phase III |
| EP-124 | | Southeast of Pond 6 | 4/21/01 | Phase III |
| EP-125 | | North of Bulk Acid Storage Area | 4/24/01 | Phase III |
| EP-126 | | North of Bulk Acid Storage Area | 4/26/01 | Phase III |
| EP-127 | | Bank of Rio Grande | 4/27/01 | Phase III |
| EP-128 | | North of IBWC Pump House | 4/27/01 | Phase III |
| EP-129 | | South Arroyo, East of I-10 | 5/3/01 | Phase III |
| EP-130 | | Copper Plant area, close to fence | 5/29/01 | Phase III |
| EP-131 | | South of Converter Bldg | 5/30/01 | Phase III |
| EP-132 | | South corner of Smeltertown | 6/4/01 | Phase III |

Summary of Aquifer Test Results (continued)
ASARCO EL Paso Smelter, Phase III RI

AQUIFER SLUG TEST RESULTS

| Test Well | Perforated Interval/ Total Depth (ft bgs) | MP Stickup/ Elevation (ft) | Initial Static Water Level from MP (ft) | Saturated Thickness (ft) | Test Date | Test Length (min:sec) | Slug Displacement ($ft^3$) | Initial Displacement (ft) | Method of Analysis (1) | Hydraulic Conductivity (ft/day) |
|---|---|---|---|---|---|---|---|---|---|---|
| *EP-12* | 52-72 | 1.5 | | | 1990 | | | | | 0.4 |
| | 80 | | | | | | | | | |
| *EP-17* | 15-25 | 0 | | | 1990 | | | | | 1.5 |
| | 30 | | | | | | | | | |
| *EP-51* | 40-70 | 1.2 | 48.73 | 21 | 10/20/97 | 28:39 | N/A | 1.92 | Slug | 4.70 |
| | 70 | 3774.66 | | | | | | | | |
| *EP-53* | 59-79 | 1.2 | 66.81 | 11 | 10/20/97 | 15:53 | N/A | 1.27 | Slug | 2.40 |
| | 79 | 3805.64 | | | | | | | | |
| *EP-54* | 60-80 | 1.6 | 69.25 | 11 | 10/20/97 | 13:27 | N/A | 2.5 | Slug | |
| | 80 | 3787.37 | | | | | | | | |
| *EP-56* | 38-58 | 2 | 48.92 | 9 | 10/20/97 | 8:00 | N/A | 1.52 | Slug | 5.30 |
| | | | | | 10/20/97 | 4:18 | N/A | | | |
| | 58 | 3772.09 | | | | | | | | |
| *EP-57* | 10-30 | 1.6 | 9.17 | | 10/21/97 | 6:53 | N/A | 1.65 | Slug | |
| | 30 | 3723.66 | | | | | | | | |
| *EP-62* | 7-17 | 1.6 | 7.62 | | 10/21/97 | 4:27 | N/A | 1.81 | Slug | |
| | 25 | 3720.64 | | | | | | | | |
| *EP-65* | 6.4-16.4 | 1.6 | 8.52 | | 10/21/97 | 8:57 | N/A | 1.81 | Slug | |
| | 16.4 | 3721.39 | | | | | | | | |
| *EP-66* | 6.4-16.4 | 1.6 | 10.37 | | 10/21/97 | 17:59 | N/A | 1.34 | Slug | |
| | 16.4 | 3722.88 | | | | | | | | |
| *EP-76* | 45-65 | 1.8 | 50.2 | 76 | 10/20/97 | 9:40 | N/A | | Slug | 10.90 |
| | 65 | 3798.56 | | | | | | | | |

Notes: (1) Slug = Slug Test Method (Confined or Unconfined)
N/A = Not Available with this solution
MP = Measuring Point
ft = feet
bgs = below ground surface

# Table 2-5

## Statistical Summary of Water Quality Results for August 2001
## ASARCO El Paso Smelter, Phase III RI

| PARAMETER | UNITS | MIN | MAX | MEAN | MEDIAN | STDEV | 2 STDEV |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| DTWL | feet | 5.26 | 71.89 | 37.93 | 40.92 | 22.13 | 44.27 |
| O2 (FLD) | mg/L | 0.00 | 240.00 | 5.83 | 2.50 | 27.49 | 54.99 |
| pH (FLD) | standard units | 6.26 | 7.77 | 7.14 | 7.12 | 0.31 | 0.62 |
| pH | standard units | 6.60 | 8.20 | 7.79 | 7.90 | 0.32 | 0.63 |
| SC | umhos/cm | 1638 | 19140 | 5615 | 4560 | 3114 | 6229 |
| SC (FLD) | umhos/cm | 780 | 18240 | 5375 | 4460 | 3074 | 6148 |
| TDS | mg/L | 1054 | 18336 | 4394 | 3284 | 2933 | 5865 |
| TSS | mg/L | 1 | 12441 | 556 | 13 | 2068 | 4135 |
| Turbidity | ntu | 0.00 | 491.00 | 51.09 | 8.81 | 87.78 | 175.55 |
| Temperature | deg. C | 21.7 | 30.9 | 25.6 | 25.5 | 2.0 | 4.1 |
| Ca | mg/L | 36 | 796 | 238 | 167 | 184 | 368 |
| Mg | mg/L | 20 | 587 | 121 | 75 | 115 | 230 |
| Na | mg/L | 221 | 3849 | 937 | 816 | 564 | 1128 |
| K | mg/L | 5 | 848 | 53 | 19 | 111 | 222 |
| HCO3 | mg/L | 115 | 2830 | 469 | 370 | 408 | 816 |
| CO3 | mg/L | 1 | 1 | 1 | 1 | 0 | 0 |
| SO4 | mg/L | 377 | 11157 | 2097 | 1604 | 1633 | 3267 |
| Cl | mg/L | 210 | 3832 | 584 | 446 | 552 | 1104 |
| F | mg/L | 0.51 | 8.50 | 2.13 | 1.90 | 1.40 | 2.81 |
| NO3+NO2-N | mg/L | 0.05 | 270.00 | 38.38 | 11.00 | 63.53 | 127.06 |
| As (DIS) | mg/L | 0.007 | 227.000 | 4.460 | 0.130 | 26.362 | 52.724 |
| As (TOT) | mg/L | 0.008 | 280.000 | 5.282 | 0.150 | 32.404 | 64.809 |
| Cd (DIS) | mg/L | 0.005 | 1.500 | 0.051 | 0.005 | 0.189 | 0.379 |
| Cd (TOT) | mg/L | 0.005 | 3.200 | 0.127 | 0.005 | 0.484 | 0.969 |
| Cr (DIS) | mg/L | 0.010 | 0.077 | 0.012 | 0.010 | 0.009 | 0.019 |
| Cr (TOT) | mg/L | 0.010 | 1.500 | 0.038 | 0.010 | 0.173 | 0.346 |
| Cu (DIS) | mg/L | 0.025 | 1.300 | 0.053 | 0.025 | 0.153 | 0.306 |
| Cu (TOT) | mg/L | 0.025 | 70.000 | 1.001 | 0.025 | 8.076 | 16.153 |
| Fe (DIS) | mg/L | 0.1 | 47.0 | 0.8 | 0.1 | 5.4 | 10.9 |
| Fe (TOT) | mg/L | 0.1 | 369.0 | 14.8 | 0.6 | 59.7 | 119.4 |
| Pb (DIS) | mg/L | 0.003 | 0.050 | 0.005 | 0.003 | 0.007 | 0.013 |
| Pb (TOT) | mg/L | 0.003 | 9.500 | 0.193 | 0.004 | 1.123 | 2.246 |
| Se (DIS) | mg/L | 0.005 | 16.000 | 0.682 | 0.160 | 2.084 | 4.167 |
| Se (TOT) | mg/L | 0.005 | 15.000 | 0.672 | 0.140 | 1.974 | 3.949 |
| Zn (DIS) | mg/L | 0.020 | 6.900 | 0.223 | 0.028 | 0.882 | 1.764 |
| Zn (TOT) | mg/L | 0.020 | 76.000 | 1.355 | 0.040 | 8.910 | 17.819 |

Notes: DTWL = Depth to Water Level
DIS = Dissolved Metals Analysis, TOT = Total Metals Analysis

# Table 2-6

## IBWC Rio Grande Water Quality Data
## February 2000 Through June 2001 At Courchesne Bridge
## ASARCO El Paso Smelter, Phase III RI

| DATE | D.O. | pH | BOD | FECAL COLIFORM | CHLORIDE | TDS | SULFATE | SC (mS/cm) | TOTAL HARDNESS | TURBIDITY AMMONIA | TURBIDITY (NTUs) | TURBIDITY TEMP (F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | |
| 02/03/00 | 10.2 | 7.7 | 2 | 980 | 248 | 916 | 388 | 1860 | 390 | 0.71 | 19.8 | 42 |
| 02/10/00 | 8.8 | 7.8 | 5 | 1560 | 278 | NR | 441 | 2210 | 420 | 0.15 | 19.5 | 49 |
| 02/17/00 | 7.4 | 7.7 | 3 | 1320 | 301 | NR | 478 | 2290 | NR | 0.38 | 16.9 | 55 |
| 02/23/00 | 8.8 | 8.2 | 8 | 480 | 155 | 840 | 252 | 1360 | NR | 0.14 | 31.7 | 50 |
| 03/02/00 | 8.6 | 8.1 | 9 | 350 | 115 | 660 | 199 | 1723 | 250 | 0.11 | 166 | 50 |
| 03/09/00 | 9.7 | 7.5 | 11 | 380 | NR | 452 | | 1023 | 220 | 0.24 | 89.9 | 49 |
| 03/16/00 | 8.5 | 7.9 | 8 | 480 | 85.21 | 308 | 155 | 907 | 220 | 0.19 | 97.1 | 56 |
| 03/23/00 | 9 | 7.9 | 8 | 1740 | 86 | 178 | 162 | 1038 | 178 | 0.23 | 112 | 54 |
| 03/30/00 | 9.3 | 8 | 10 | 720 | 101 | 620 | 197 | 1090 | 240 | 0.182 | 72.3 | 58 |
| 04/05/00 | 7.14 | 8.11 | 11 | 450 | 119 | 686 | 227 | 1282 | 260 | 0.24 | 63.7 | 60 |
| 04/13/00 | 7.52 | 8.02 | 11 | 1960 | 109 | 640 | 214 | 1150 | 260 | 0.141 | 54.5 | 62 |
| 04/20/00 | 9.6 | 7.8 | 15 | 2720 | 108 | 690 | 208 | 1187 | NR | 0.139 | 49.7 | 58 |
| 04/27/00 | 7.4 | 7.7 | 20 | 3160 | 120 | 772 | 221 | 1224 | 260 | 0.21 | 44.6 | 69 |
| 05/04/00 | 8.4 | 7.7 | 16 | 2120 | 144.8 | 886 | 258 | 1212 | 280 | 0.3 | 49.1 | 67 |
| 05/10/00 | 7.3 | 8.3 | 9 | 1630 | 111 | 676 | 216 | 1152 | 240 | 0.32 | 43.1 | 70 |
| 05/18/00 | 8 | 8.2 | 7 | 2870 | 91 | 684 | 213 | 1217 | 250 | 1.16 | 58.6 | 63 |
| 05/25/00 | 5.7 | 8.1 | 10 | 300 | 82 | 536 | 196 | 1123 | 250 | 0.14 | 70.4 | 73 |
| 06/01/00 | 6.95 | 7.92 | 7 | 1380 | 99.5 | 630 | 206 | 1113 | 260 | 0.1 | 64.3 | 72 |
| 06/08/00 | 6.6 | 8.3 | 8 | 380 | 101 | 1532 | 206 | 1100 | 260 | 0.08 | 106 | 74 |
| 06/15/00 | 7.7 | 8.1 | 12 | 760 | 99.7 | 640 | 212 | 1096 | 250 | 0.083 | 67.9 | 73 |
| 06/22/00 | 6.02 | 8.31 | 6 | NR | 96.9 | | 208 | 1066 | 240 | 0.0293 | NR | 77 |
| 06/29/00 | 5.5 | 8.11 | 7 | 2000 | 79 | | 183 | 919 | 198.8 | 0.2 | NR | 76 |
| 07/06/00 | 6.4 | 8.2 | 4 | 200 | 88 | 610 | 191 | 912 | 230 | 0.07 | 180 | 80 |
| 07/13/00 | 6 | 8.4 | 3 | 0 | 84 | 572 | 179 | 1022 | 220 | 0.03 | 112 | 79 |
| 07/20/00 | 6.4 | 8.5 | 4 | 800 | 89 | 724 | 192 | 1020 | 230 | 0.06 | 94 | 78 |
| 07/27/00 | 6.3 | 8.8 | 5 | 3000 | 88 | 658 | 176 | 1045 | 230 | 0.08 | 121 | 69 |
| 08/03/00 | 6.4 | 8.5 | 4 | 300 | NR | 580 | NR | 1020 | NR | 0.059 | 89 | 78 |
| 08/10/00 | 6.6 | 8.36 | 4 | 1000 | NR | 700 | NR | 1091 | 240 | 0.086 | 90 | 77 |
| 08/17/00 | NR | NR | NR | NR | NR | | NR | NR | NR | NR | NR | NR |
| 08/24/00 | 7.2 | 8.76 | 4 | 3700 | 99.18 | 746 | 209.76 | 1171 | NR | 0.0532 | 80.1 | 73 |
| 08/31/00 | 7.12 | 8.34 | 4 | 100 | 91.15 | 578 | 184.97 | 1091 | 240 | 0.107 | 161 | 74 |
| 09/07/00 | 6.42 | 8.44 | 5 | 400 | 101.71 | 714 | 219.47 | 1162 | NR | 0.0734 | NR | 74 |
| 09/14/00 | 6.61 | 8.5 | 3 | 1200 | NR | 760 | NR | NR | NR | NR | NR | NR |
| 09/21/00 | NR | NR | 4 | 1400 | 121.13 | 760 | 268.27 | 550 | 300 | 0.225 | 56.8 | NR |
| 09/28/00 | 7.5 | 8.48 | | 900 | NR | 778 | NR | 1257 | 270 | 0.123 | NR | 68 |
| 10/05/00 | 8.46 | 8.3 | 6 | 300 | 127 | 808 | 267 | 1463 | 330 | 0.114 | 62.8 | 68 |
| 10/12/00 | 7.87 | 8.1 | 6 | 2400 | 113 | NR | 238 | 1308 | 300 | 0.0185 | 25.3 | 62 |
| 10/19/00 | 8.2 | 8 | 2 | 19000 | NR | NR | NR | 1540 | NR | 0.0556 | NR | 62 |
| 10/26/00 | 8.61 | 8 | 8 | 2600 | NR | NR | NR | 1385 | NR | 0.0715 | NR | 58 |
| 11/02/00 | NR | NR | 6 | 1100 | 177 | 1150 | 375 | NR | 460 | 0.14 | 58.7 | NR |

# Table 2-6

## IBWC Rio Grande Water Quality Data
## February 2000 Through June 2001 At Courchesne Bridge
## ASARCO El Paso Smelter, Phase III RI

| DATE | D.O. | pH | BOD | FECAL COLIFORM | CHLORIDE | TDS | SULFATE | SC (mS/cm) | TOTAL HARDNESS | TURBIDITY AMMONIA | TURBIDITY (NTUs) | TURBIDITY TEMP (F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/09/00 | 10.7 | 8.2 | 4 | 400 | NR | 928 | NR | 1690 | NR | NR | 66.6 | 44 |
| 11/16/00 | 10.6 | 8.2 | 2 | 400 | NR | 1152 | NR | 2020 | 390 | 0.455 | 31.1 | 66 |
| 11/30/00 | 10.1 | 8.2 | 3 | 800 | NR | 1178 | NR | 1078 | NR | 0.417 | 8.94 | 47 |
| 12/07/00 | 13.8 | 7.9 | 2 | 2000 | 196 | 1184 | 412 | 2050 | 400 | 0.238 | 8.48 | 43 |
| 12/14/00 | 6.5 | 7.8 | 5 | NR | 293 | 1260 | 341 | 3042 | 400 | 0.273 | 26.2 | 56 |
| 12/28/00 | 11.5 | 8.4 | 3 | 300 | 218 | 1176 | 428 | 1901 | 380 | 0.392 | 12.3 | NR |
| 01/04/01 | 9.2 | 7.8 | 3 | 1300 | 224 | 1220 | 445 | 2030 | 410 | 0.421 | 15.6 | 49.8 |
| 01/11/01 | 10.8 | 7.2 | 3 | 9700 | 238 | 1270 | 430 | 2140 | 380 | 0.567 | 15.5 | 43.7 |
| 01/18/01 | 11.6 | 7.3 | 3 | 430 | 256 | 1280 | 446 | 2120 | 380 | 0.561 | 13.6 | 38.8 |
| 01/25/01 | 11.2 | 7.6 | 4 | 1200 | 252 | 1164 | 442 | 2180 | 390 | 0.49 | 21.8 | 43.0 |
| 02/01/01 | 8.9 | 7.5 | 10 | 69600 | 259 | 1234 | 426 | 2120 | 360 | 4.94 | 42.8 | 46.0 |
| 02/08/01 | 8.5 | 7.9 | 4 | 1300 | 164 | 888 | 242 | 1435 | 240 | 0.988 | 140 | 50.9 |
| 02/15/01 | 9.4 | 7.7 | 4 | 340 | 192 | 942 | 307 | 1620 | 310 | 0.209 | 68.7 | 47.0 |
| 02/22/01 | 8.8 | 7.5 | 4 | 7900 | 158 | 950 | 248 | 1570 | 300 | 0.232 | 51.8 | 50.1 |
| 03/01/01 | 8.9 | 7.7 | 4 | 510 | 126 | 746 | 199 | 1236 | 210 | 0.0353 | 326 | 50.0 |
| 03/08/01 | 8.8 | 7.9 | 4 | 310 | 91 | 664 | 167 | 1123 | 230 | 0.14 | 240 | 51.7 |
| 03/15/01 | 9.3 | 7.9 | 4 | 200 | 89 | 560 | 171 | 930 | 210 | 0.11 | 176 | 52.7 |
| 03/22/01 | 8.7 | 8.1 | 4 | 380 | 88 | 498 | 174 | 944 | 210 | 0.0902 | 135 | 58.1 |
| 03/29/01 | 8.6 | 8.1 | 3 | 1400 | 93 | 610 | 199 | 1008 | 220 | 0.84 | 82 | 55.7 |
| 04/05/01 | 7.3 | 7.8 | 2 | 1300 | 110 | 708 | 221 | 1139 | 250 | 0.09 | 65.6 | 64.0 |
| 04/12/01 | # | 7.9 | 2 | 700 | 106 | 722 | 217 | 1073 | 250 | 0.07 | 67.7 | 54.0 |
| 04/19/01 | 7.0 | 7.9 | 3 | 1900 | 122 | 632 | 249 | 1147 | 280 | 0.10 | 61.3 | 64.6 |
| 04/26/01 | 7.9 | 8.1 | 1 | 200 | 111 | 630 | 211 | 1104 | 230 | 0.07 | 63.0 | 60.6 |
| 05/03/01 | 7.9 | 8.1 | 3 | 630 | 125 | 594 | 258 | 1266 | 270 | 0.07 | 49.8 | 62.3 |
| 05/10/01 | 7.2 | 8.1 | 2 | 650 | 112 | 688 | 237 | 1172 | 260 | 0.09 | 81.8 | 68.6 |
| 05/17/01 | 7.1 | 8.1 | 2 | 1900 | 105 | 704 | 224 | 1116 | 260 | 0.16 | 53.6 | 68.8 |
| 05/24/01 | 6.9 | 8.04 | 2 | 800 | 107 | 658 | 228 | 1092 | 260 | 0.30 | 75.7 | 70.8 |
| 06/07/01 | 6.8 | 8.1 | 1 | 1100 | 93 | 630 | 196 | 1040 | 240 | 0.14 | 58.4 | 72.8 |
| 06/14/01 | 6.6 | 8.2 | 1 | 500 | 89 | 678 | 193 | 1017 | 264 | 0.06 | 55.2 | 70.3 |
| 06/21/01 | 6.9 | 8.2 | 2 | 700 | 85 | 690 | 183 | 994 | 220 | 0.06 | 61.4 | 74.7 |
| 06/28/01 | 6.1 | 8.2 | 4 | 6500 | 98 | 616 | 204 | 1083 | 250 | 0.06 | 97.6 | 77.2 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| **AVERAGE** | **8.1** | **8.0** | **5** | **2669** | **135** | **783** | **254** | **1336** | **278** | **0.29** | **74.6** | **61.5** |
| **MEDIAN** | **7.9** | **8.1** | **4** | **940** | **110** | **700** | **217** | **1151** | **260** | **0.14** | **63.0** | **62.2** |
| **STD** | **1.6** | **0.3** | **3.8** | **8674** | **61** | **258** | **90** | **446** | **67** | **0.61** | **56.3** | **11.3** |
| **MAXIMUM** | **13.8** | **8.8** | **20** | **69600** | **301** | **1532** | **478** | **3042** | **460** | **4.94** | **326.0** | **79.5** |
| **MINIMUM** | **5.5** | **7.2** | **1.0** | **0.0** | **79.0** | **178.0** | **155.0** | **550.0** | **178.0** | **0.0** | **8.5** | **38.8** |

Notes:

NR: Not Reported.

All concentrations in milligrams per liter (mg/l) unless otherwise indicated.

Fecal Coliform reported in cfu/100 ml units.

Courchesne Bridge is located 9.5 Miles above Haskell R. Street Wastewater Treatment Plant.

See Figure 3-32 for sample locations.

# Table 2-7

## IBWC Rio Grande Water Quality
## February 2000 Through June 2001, Across From Bowie High School Football Field
## ASARCO El Paso Smelter, Phase III RI

| DATE | D.O. | pH | BOD | FECAL COLIFORM | CHLORIDE | TDS | SULFATE | SC (mS/cm) | TOTAL HARDNESS | AMMONIA | TURBIDITY (NTUs) | TEMP (F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 02/03/00 | 10.1 | 8 | 4 | 2120 | 271 | 902 | 421 | 1964 | 370 | 0.96 | 12.1 | 40 |
| 02/10/00 | 10.8 | 8.2 | 5 | 1780 | 341 | 1368 | 528 | 2550 | 422 | 0.08 | 8.2 | 47 |
| 02/17/00 | 9.2 | 8.5 | 2 | 70 | 360 | 1620 | 549 | 2540 | NR | 0.25 | 10.4 | 54 |
| 02/23/00 | 10.5 | 8.6 | 9 | 380 | 275 | 1364 | 473 | 2150 | NR | 0.12 | 8.12 | 50 |
| 03/02/00 | 9.4 | 8.3 | 9 | 200 | 182 | 912 | 299 | 1663 | 280 | 0.22 | 10.8 | 49 |
| 03/09/00 | 11.5 | 8 | 11 | 690 | NR | NR | 750 | 1484 | 260 | 0.57 | 10.4 | 50 |
| 03/16/00 | 10.5 | 8.1 | 8 | 100 | 113.29 | 464 | 228 | 1226 | 260 | 0.51 | 20.1 | 54 |
| 03/23/00 | 10 | 8.2 | 9 | 90 | 94 | 206 | 161 | 1274 | 206 | 0.133 | 19.7 | 54 |
| 03/30/00 | 10.1 | | 12 | 38 | 105 | 522 | 188 | 1110 | 230 | 0.324 | 12.1 | 58 |
| 04/05/00 | 7.49 | 8.1 | 15 | 580 | 110 | 688 | 198.2 | 1161 | 230 | 0.13 | 11.7 | 55 |
| 04/13/00 | 7.93 | 7.95 | 11 | 320 | 113 | 610 | 205 | 1168 | 250 | 0.096 | 8.95 | 58 |
| 04/20/00 | 10.8 | 7.9 | 14 | 370 | 112 | 662 | 202 | 1163 | | 0.174 | 9.3 | 53 |
| 04/27/00 | 7.5 | 7.9 | 16 | 460 | 118 | 756 | 203 | 1170 | 250 | 0.15 | 6.87 | 67 |
| 05/04/00 | 8.4 | 7.9 | 16 | 1480 | 174 | 822 | 268 | 1408 | 260 | 0.16 | 6.53 | 60 |
| 05/10/00 | 8.5 | 8.3 | 6 | 100 | 175 | 1004 | 268 | 1257 | 280 | 0.09 | 5.4 | 71 |
| 05/18/00 | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR |
| 05/25/00 | 7.6 | 8.2 | 10 | 1140 | 89 | 510 | 194 | 1143 | 250 | 0.06 | 10.3 | 62 |
| 6/01/00 | 8.44 | 8.27 | 5 | 890 | 94.4 | 584 | 192 | 1024 | 240 | 0.1 | 16.8 | 69 |
| 5/08/00 | 9 | 8.4 | 8 | 720 | 97 | 1742 | 185 | 1027 | 230 | 0.06 | 6.87 | 72 |
| 06/15/00 | 11.9 | 8.7 | 11 | 1700 | 103 | 580 | 199 | 1031 | 220 | 0.04 | 19.2 | 73 |
| 06/22/00 | 11.4 | 8.7 | 6 | NR | NR | NR | NR | 1020 | 220 | 0.141 | NR | 75 |
| 06/29/00 | 6.39 | 8.3 | 8 | 2000 | 69.6 | | 166 | 856 | 191.5 | 0.05 | NR | 76 |
| 07/06/00 | 9.9 | 8.7 | 6 | 100000 | 96 | 416 | 195 | 1070 | 230 | 0.211 | 101 | 77 |
| 07/13/00 | 12.5 | 8.8 | 6 | 26800 | 103 | 602 | 194 | 1096 | 210 | 0.14 | 82 | 77 |
| 07/20/00 | 7 | 8.7 | 10 | 19200 | 113 | 654 | 202 | 1130 | 240 | 0.03 | 13.8 | 68 |
| 07/27/00 | 5.5 | 8.5 | 14 | 7000 | 83 | 608 | 166 | 964 | 210 | 0.06 | 76.2 | 73 |
| 08/03/00 | 8.6 | 8.6 | 5 | 600 | NR | 544 | NR | 1009 | | 0.056 | 35.5 | 74 |
| 08/10/00 | 7.6 | 8.51 | 6 | 300000 | NR | 592 | NR | 965 | 220 | 0.167 | 34.9 | 80 |
| 08/17/00 | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR |
| 08/24/00 | 8.9 | 8.7 | 6 | 800 | 93.46 | 662 | 189.1 | 1076 | | 0.054 | 39.9 | 71 |
| 08/31/00 | 7.6 | 8.54 | 6 | 100 | 82.11 | 514 | 168.99 | 1007 | 240 | 0.0655 | 232 | 72 |
| 09/07/00 | 7.77 | 8.6 | 4 | 1100 | 93 | 702 | 198.99 | 1077 | NR | 0.0513 | NR | 73 |
| 09/14/00 | 8.57 | 8.51 | 3 | 1600 | NR | 828 | NR | NR | NR | NR | NR | NR |
| 09/21/00 | | | 4 | 4900 | 134.35 | 818 | NR | 610 | 310 | 0.317 | 40.6 | NR |
| 09/28/00 | 8.07 | 8.41 | NR | 220 | NR | 1020 | NR | 1500 | 320 | 0.262 | NR | 67 |
| 10/05/00 | 8.16 | 8.3 | 6 | 93000 | 145 | 956 | 297 | 1560 | 320 | 0.267 | 40.8 | 67 |
| 10/12/00 | 8.44 | 8.3 | 3 | 1600 | 113 | NR | 231 | 1285 | 290 | 0.0797 | 26.2 | 63 |
| 10/19/00 | 8.33 | 8.2 | 2 | 5700 | NR | NR | NR | 1600 | NR | 0.064 | NR | 63 |
| 10/26/00 | 8.68 | 8.2 | 9 | 2400 | NR | NR | NR | 1335 | NR | 0.0758 | NR | 59 |

# Table 2-7

## IBWC Rio Grande Water Quality
## February 2000 Through June 2001, Across From Bowie High School Football Field
## ASARCO El Paso Smelter, Phase III RI

| DATE | D.O. | pH | BOD | FECAL COLIFORM | CHLORIDE | TDS | SULFATE | SC (mS/cm) | TOTAL HARDNESS | AMMONIA | TURBIDITY (NTUs) | TEMP (F) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11/02/00 | 9.2 | 8.4 | 6 | 200 | 180 | 1150 | 373 | 1900 | 440 | 0.18 | 39.2 | 53 |
| 11/09/00 | 11 | 8.3 | 2 | 500 | NR | 1020 | NR | 1710 | NR | NR | 39.7 | 46 |
| 11/16/00 | 11 | 8.4 | 2 | 600 | NR | 1264 | NR | 2110 | 390 | 0.395 | 18.4 | 65 |
| 11/30/00 | 10.9 | 8.2 | 5 | 10 | NR | 1282 | NR | 2117 | NR | 0.489 | 7.08 | 48 |
| 12/07/00 | 11.9 | 8.3 | 2 | 200 | 202 | 1128 | 428 | 2030 | 380 | 0.649 | 21.5 | 47 |
| 12/14/00 | 10.2 | 8.4 | 3 | 850 | 232 | 1248 | 422 | 1808 | 375 | 0.297 | 52.4 | 45 |
| 12/28/00 | 12.2 | 8.4 | 3 | 50 | 232 | 1234 | 437 | 1971 | 430 | 0.367 | 27 | 43 |
| 01/04/01 | 10.9 | 8.0 | 2 | 2900 | 246 | 1258 | 450 | 2170 | 380 | 0.457 | 18.3 | 38 |
| 01/11/01 | 11.2 | 7.2 | 7 | 2000 | 249 | 1262 | 442 | 2160 | 370 | 0.515 | 12.6 | 43 |
| 01/18/01 | 12.2 | 7.8 | 3 | 120 | 274 | 1270 | 460 | 2190 | 380 | 0.0499 | 12.2 | 40 |
| 01/25/01 | 11.0 | 7.6 | 4 | 8900 | 260 | 1210 | 437 | 2160 | 380 | 0.42 | 34.5 | 45 |
| 02/01/01 | 11.7 | 7.7 | 12 | 11300 | 272 | 1338 | 451 | 2230 | 380 | 0.547 | 9.22 | 40 |
| 02/08/01 | 9.5 | 7.8 | 5 | 1160 | 142 | 762 | 207 | 1302 | 220 | 0.364 | 39.3 | 50 |
| 02/15/01 | 11.6 | 7.9 | 3 | 190 | 165 | 850 | 269 | 1470 | 290 | 0.341 | 25.4 | 44 |
| 02/22/01 | 10.3 | 8.0 | 3 | 80 | 155 | 876 | 242 | 1530 | 300 | 0.357 | 22.7 | 48 |
| 03/01/01 | 11.3 | 8.0 | 3 | 270 | 136 | 792 | 216 | 1318 | 230 | 0.465 | 40.3 | 48 |
| 03/08/01 | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | NR | 32 |
| 03/15/01 | 11.6 | 8.2 | 3 | 300 | 114 | 680 | 217 | 1115 | 240 | 0.33 | 48.3 | 47 |
| 3/22/01 | 10.4 | 8.4 | 3 | 220 | 88 | 488 | 163 | 918 | 210 | 0.0615 | 45.9 | 57 |
| 3/29/01 | 10.2 | 8.2 | 2 | 500 | 98 | 620 | 197 | 1030 | 230 | 0.63 | 27 | 56 |
| 04/05/01 | 7.4 | 8.2 | 2 | 700 | 110 | 620 | 221 | 1075 | 240 | 0.03 | 17.5 | 61 |
| 04/12/01 | # | 8.0 | 2 | 900 | 108 | 734 | 222 | 1113 | 250 | 0.07 | 17.9 | 52 |
| 04/19/01 | 7.8 | 8.0 | 2 | 700 | 139 | 698 | 305 | 1260 | 260 | 0.08 | 12.9 | 63 |
| 04/26/01 | 9.2 | 8.2 | 1 | 100 | 112 | 624 | 201 | 1106 | 240 | 0.03 | 10.2 | 60 |
| 05/03/01 | 8.9 | 8.1 | 2 | 800 | 133 | 634 | 261 | 1308 | 290 | 0.06 | 15 | 60 |
| 05/10/01 | 9.2 | 8.2 | 2 | 420 | 134 | 718 | 257 | 1284 | 280 | 0.05 | 7.08 | 68 |
| 05/17/01 | 8.5 | 8.2 | 2 | 2600 | 114 | 650 | 220 | 1117 | 240 | 0.23 | 12.7 | 61 |
| 05/24/01 | 9.7 | 8.3 | 1 | 1000 | 117 | 704 | 232 | 1027 | 250 | 0.16 | 6.54 | 67 |
| 06/07/01 | 9.8 | 8.3 | 1 | 500 | 94 | 696 | 196 | 1011 | 240 | 0.06 | 12.7 | 69 |
| 06/14/01 | 8.7 | 8.1 | 3 | 100 | 96 | 630 | 190 | 1032 | 241 | 0.03 | 8.6 | 64 |
| 06/21/01 | 10.1 | 8.3 | 2 | 3500 | 90 | 666 | 182 | 1007 | 230 | 0.02 | 17 | 73 |
| 06/28/01 | 7.4 | 8.4 | 6 | 2000 | 83 | 366 | 174 | 958 | 224 | 0.05 | 42.7 | 80 |
| **AVERAGE** | **9.5** | **8.2** | **5.7** | **9312.2** | **147.9** | **833.9** | **277.0** | **1391.2** | **278.1** | **0.21** | **27.2** | **58.8** |
| **MEDIAN** | **9.5** | **8.2** | **5.0** | **700.0** | **114.2** | **711.0** | **219.7** | **1226.0** | **250.0** | **0.1** | **17.5** | **59.5** |
| **STD** | **1.6** | **0.3** | **4.0** | **39755.8** | **70.1** | **321.0** | **125.2** | **456.1** | **66.0** | **0.2** | **32.9** | **12.0** |
| **MAXIMUM** | **12.5** | **8.8** | **16.0** | **300000** | **360.0** | **1742.0** | **750.0** | **2550.0** | **440.0** | **0.96** | **232.0** | **80.0** |
| **MINIMUM** | **5.5** | **7.2** | **1.0** | **10.0** | **69.6** | **206.0** | **161.0** | **610.0** | **191.5** | **0.02** | **5.4** | **32.0** |

Notes:

NR: Not Reported.

All concentrations in milligrams per liter (mg/l) unless otherwise indicated.

Fecal Coliform reported in cfu/100 ml units.

ie High School Football Field is located 1.5 Miles above Haskell R. Street Wastewater Treatment Plant.

See Figure 3.3-1 for sample locations.

# Table 2-8

## IBWC Average Concentrations of Rio Grande Surface Water Quality Data
## February 2001 Through June 2001
## ASARCO El Paso Smelter, Phase III RI

| Parameter | Courchesne Bridge | Bowie High School |
|---|---|---|
| D.O. | 8.10 | 9.50 |
| pH | 8.00 | 8.20 |
| BOD | 5.00 | 5.70 |
| Fecal Coliform (cfu/100 ml) | 2669.00 | 9312.00 |
| Chloride | 135.00 | 147.90 |
| TDS | 783.00 | 833.90 |
| Sulfate | 254.00 | 277.00 |
| SC (mS/cm) | 1336.00 | 1391.00 |
| Total Hardness | 278.00 | 278.00 |
| Ammonia | 0.29 | 0.21 |
| Turbidity (NTUs) | 74.60 | 27.20 |
| Temperature (°F) | 61.50 | 58.80 |

Notes:
See Figure 3-32 for sample locations.
All concentrations in milligrams per liter (mg/l) unless otherwise indicated.
Average concentrations derived from weekly sampling efforts.

Ta. . 2-9

# Hydrometrics Surface Water Quality Results
## February 2000 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| | | | | | | | | | Dissolved | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Sample | DO | PH | SC | TDS | TSS | Turb. | Temp | Ca | Mg | Na | K | HCO3 | CO3 | SO4 | Cl | F | N |
| ID | Date | mg/l | | umhos/cm | mg/l | mg/l | NTU | (F) | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| | | | | | | | | | | | | | | | | | | |
| **Rio Grande** | | | | | | | | | | | | | | | | | | |
| SEP-2 | 2/14/00 | 10.2 | 8.5 | 2330 | 1551 | 24 | 13 | 72.5 | 119 | 31 | 315 | 13 | 275 | 12 | 593 | 297 | 0.85 | 1.3 |
| SEP-2 | 5/10/00 | 5.2 | 8.3 | 1086 | 694 | 74 | 24.2 | 80.2 | 77 | 17 | 131 | 9.5 | 220 | 1 | 211 | 103 | 0.72 | 0.33 |
| SEP-2 | 8/21/00 | 5.4 | 8.3 | 931 | 609 | 426 | 17.8 | 52.9 | 75 | 19 | 91 | 8.4 | 272 | 1 | 184 | 87 | 0.69 | 0.69 |
| SEP-2 | 11/15/00 | 10.4 | 7.9 | 2070 | 1363 | 50 | 17.8 | 53.4 | 107 | 26 | 261 | 11 | 342 | 1 | 443 | 210 | 0.82 | 1.3 |
| SEP-2 | 2/28/01 | 10 | 8 | 1179 | 739 | 116 | 64 | 73.0 | 72 | 17 | 142 | 8.5 | 232 | 1 | 244 | 136 | 0.72 | 0.59 |
| SEP-2 | 5/17/01 | 9 | 8.3 | 1090 | 697 | 116 | 27 | 73.2 | 71 | 17 | 135 | 9.9 | 207 | 1 | 239 | 130 | 0.74 | 0.47 |
| SEP-2 | 5/17/01 | 9 | 8.4 | 1090 | 691 | 107 | 27 | 80.4 | 71 | 17 | 130 | 9.1 | 212 | 2.4 | 240 | 116 | 0.73 | 0.52 |
| SEP-2 | 7/31/01 | 7.5 | 8.1 | 988 | 624 | 254 | 210 | 32.0 | 57 | 15 | 119 | 7.9 | 270 | 1 | 191 | 92 | 0.69 | 0.16 |
| | | | | | | | | | | | | | | | | | | |
| SEP-4 | 2/14/00 | 10.9 | 8.4 | 2440 | 1574 | 61 | 15 | 67.1 | 112 | 32 | 334 | 13 | 270 | 7.2 | 501 | 315 | 0.88 | 1.7 |
| SEP-4 | 5/10/00 | 6.4 | 8.3 | 1122 | 519 | 58 | 28 | 80.1 | 78 | 18 | 146 | 9.7 | 227 | 1 | 223 | 113 | 0.72 | 0.24 |
| SEP-4 | 8/21/00 | 5.6 | 8.3 | 938 | 617 | 437 | 18 | 50.4 | 85 | 21 | 101 | 11 | 271 | 1 | 181 | 83 | 0.64 | 0.6 |
| SEP-4 | 11/15/00 | 9.6 | 8.2 | 2160 | 1448 | 55 | 40 | 50.5 | 113 | 28 | 287 | 11 | 320 | 1 | 492 | 247 | 0.81 | 1.3 |
| SEP-4 | 2/28/01 | 9.3 | 7.9 | 1226 | 777 | 95 | 56.8 | 66.0 | 63 | 16 | 132 | 7.3 | 220 | 1 | 243 | 141 | 0.76 | 0.67 |
| SEP-4 | 5/17/01 | 8 | 8.3 | 1106 | 705 | 80 | 29.3 | 88.3 | 71 | 17 | 136 | 9.9 | 220 | 1 | 245 | 116 | 0.75 | 0.54 |
| SEP-4 | 7/31/01 | 10.1 | 8.1 | 1047 | 652 | 176 | 114 | 32.0 | 61 | 16 | 128 | 7.5 | 220 | 1 | 217 | 110 | 0.72 | 0.15 |
| | | | | | | | | | | | | | | | | | | |
| SEP-6 | 1/31/00 | 7.2 | 8.2 | 1412 | 861 | 62 | 27 | 79.9 | 88 | 21 | 193 | 8.4 | 228 | 1 | 242 | 192 | 0.7 | 1.4 |
| SEP-6 | 5/9/00 | 6.2 | 8.3 | 1122 | 703 | 108 | 25 | 78.3 | 80 | 18 | 146 | 9.8 | 226 | 1 | 210 | 98 | 0.72 | 0.59 |
| SEP-6 | 5/9/00 | 6.3 | 8.3 | 1124 | 700 | 104 | | 82.2 | 78 | 18 | 140 | 9.1 | 228 | 1 | 218 | 118 | 0.72 | 0.63 |
| SEP-6 | 8/14/00 | 5.5 | 8.6 | 987 | 630 | 274 | 25 | 51.8 | 65 | 15 | 93 | 8.2 | 223 | 11 | 188 | 73 | 0.68 | 0.63 |
| SEP-6 | 11/10/00 | 7.9 | 8.2 | 1880 | 1275 | 296 | 29 | 60.8 | 106 | 27 | 221 | 10 | 334 | 1 | 360 | 204 | 0.7 | 2.2 |
| SEP-6 | 2/23/01 | 7.6 | 8.4 | 1338 | 824 | 93 | 40 | 61.5 | 72 | 16 | 155 | 8.4 | 234 | 4.8 | 236 | 158 | 0.74 | 1.2 |
| SEP-6 | 2/23/01 | 7.8 | 8.4 | 1333 | 837 | 94 | | 71.8 | 73 | 16 | 155 | 8.4 | 234 | 2.4 | 245 | 160 | 0.72 | 1.2 |
| SEP-6 | 5/16/01 | 8.3 | 8.2 | 1000 | 638 | 191 | 56 | 80.4 | 71 | 17 | 125 | 9.9 | 207 | 1 | 218 | 108 | 0.67 | 0.64 |
| SEP-6 | 8/1/01 | 7.7 | 8.2 | 1045 | 663 | 182 | 127 | 77.9 | 64 | 16 | 124 | 9.5 | 214 | 1 | 212 | 105 | 0.68 | 0.55 |
| | | | | | | | | | | | | | | | | | | |
| SEP-9 | 2/14/00 | 6.1 | 8.3 | 2120 | 1341 | 36 | 15 | 70.9 | 100 | 23 | 285 | 12 | 246 | 1 | 341 | 185 | 0.81 | 2.7 |
| SEP-9 | 5/10/00 | 5.5 | 8 | 1446 | 918 | 58 | 19.8 | 83.1 | 74 | 16 | 224 | 10 | 220 | 1 | 237 | 190 | 0.79 | 3.5 |
| SEP-9 | 8/21/00 | 5.4 | 8.2 | 1264 | 803 | 248 | 17 | 59.5 | 67 | 15 | 155 | 8.1 | 227 | 1 | 236 | 145 | 0.75 | 3.8 |

Table 2-9

# Hydrometrics Surface Water Quality Results
## February 2000 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| | | | | | | | | | Dissolved | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Sample | DO | PH | SC | TDS | TSS | Turb. | Temp | Ca | Mg | Na | K | HCO3 | CO3 | SO4 | Cl | F | N |
| ID | Date | mg/l | | umhos/cm | mg/l | mg/l | NTU | (F) | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| | | | | | | | | | | | | | | | | | | |
| SEP-9 | 11/15/00 | 7.2 | 7.9 | 1960 | 1275 | 29 | 11.8 | 54.0 | 87 | 19 | 268 | 9.8 | 259 | 1 | 348 | 245 | 0.8 | 3.4 |
| SEP-9 | 2/28/01 | 8.4 | 7.9 | 1375 | 882 | 152 | 60.5 | 77.9 | 72 | 16 | 195 | 9.4 | 207 | 1 | 276 | 173 | 0.75 | 3.4 |
| SEP-9 | 5/17/01 | 8.5 | 8.1 | 1400 | 901 | 78 | 28.6 | 88.7 | 71 | 17 | 203 | 12 | 217 | 1 | 290 | 206 | 0.81 | 3.2 |
| SEP-9 | 7/31/01 | 8.7 | 8.2 | 1143 | 750 | 158 | 84.5 | 32.0 | 69 | 17 | 145 | 8.6 | 215 | 1 | 245 | 110 | 0.72 | 0.85 |
| | | | | | | | | | | | | | | | | | | |
| SEP-10 | 2/14/00 | 9.1 | 8.5 | 2210 | 1458 | 35 | 13 | 74.7 | 108 | 26 | 294 | 13 | 255 | 14.4 | 382 | 290 | 0.87 | 1.6 |
| SEP-10 | 5/10/00 | 5.9 | 8.3 | 1076 | 685 | 75 | 21.3 | 74.8 | 77 | 17 | 135 | 9.7 | 220 | 1 | 215 | 94 | 0.72 | 6.1 |
| SEP-10 | 5/10/00 | 6 | 8.5 | 1072 | 678 | 78 | | 79.9 | 78 | 17 | 138 | 9.5 | 206 | 7 | 277 | 104 | 0.72 | 0.18 |
| SEP-10 | 8/21/00 | 5.4 | 8.5 | 927 | 588 | 406 | 16.5 | 55.9 | 75 | 18 | 94 | 8.7 | 226 | 10 | 172 | 78 | 0.66 | 0.61 |
| SEP-10 | 11/15/00 | 11.5 | 8 | 2000 | 1326 | 32 | 16.1 | 53.2 | 103 | 25 | 257 | 11 | 310 | 1 | 423 | 237 | 0.86 | 1.3 |
| SEP-10 | 2/28/01 | 7.4 | 8.2 | 1074 | 675 | 154 | 86 | 72.9 | 64 | 14 | 107 | 7.3 | 233 | 1 | 201 | 117 | 0.71 | 0.49 |
| SEP-10 | 5/17/01 | 9.9 | 8.4 | 1094 | 713 | 81 | 32 | 82.9 | 70 | 17 | 133 | 9.1 | 215 | 3.6 | 244 | 133 | 0.75 | 0.45 |
| SEP-10 | 7/31/01 | 8.3 | 8 | 1000 | 657 | 228 | 133 | 32.0 | 61 | 15 | 119 | 9.7 | 209 | 1 | 193 | 101 | 0.7 | 0.15 |
| | | | | | | | | | | | | | | | | | | |
| SEP-11 | 2/14/00 | 9.5 | 8.6 | 2300 | 1517 | 17 | 16 | 75.4 | 112 | 29 | 315 | 14 | 246 | 13.8 | 344 | 310 | 0.86 | 1.6 |
| SEP-11 | 5/10/00 | 6.2 | 8.3 | 1083 | 687 | 79 | 28.5 | 80.4 | 79 | 18 | 137 | 10 | 218 | 1 | 217 | 98 | 0.72 | 0.32 |
| SEP-11 | 8/21/00 | 5.8 | 8.3 | 929 | 583 | 401 | 17 | 54.9 | 69 | 17 | 89 | 8.2 | 250 | 1 | 186 | 83 | 0.65 | 0.58 |
| SEP-11 | 11/15/00 | 10.7 | 8 | 2060 | 1359 | 30 | 17.3 | 54.9 | 104 | 26 | 267 | 11 | 311 | 1 | 450 | 251 | 0.8 | 1.5 |
| SEP-11 | 11/15/00 | 10.9 | 8 | 2060 | 1371 | 32 | | 54.0 | 105 | 25 | 261 | 11 | 312 | 1 | 395 | 243 | 0.82 | 1.6 |
| SEP-11 | 2/28/01 | 7.7 | 8.1 | 1141 | 739 | 131 | 74.9 | 72.3 | 70 | 16 | 129 | 8.2 | 235 | 1 | 230 | 130 | 0.72 | 0.56 |
| SEP-11 | 5/17/01 | 7.5 | 8.4 | 1083 | 690 | 107 | 29 | 82.8 | 72 | 17 | 134 | 9.3 | 223 | 3.6 | 215 | 126 | 0.73 | 0.6 |
| SEP-11 | 7/31/01 | 8 | 7.9 | 1003 | 654 | 213 | 139 | 32.0 | 60 | 15 | 119 | 8.4 | 195 | 1 | 221 | 99 | 0.68 | 0.15 |
| | | | | | | | | | | | | | | | | | | |
| SEP-12 | 2/14/00 | 9.6 | 8.5 | 2330 | 1525 | 22 | 16 | 72.0 | 113 | 30 | 315 | 13 | 283 | 12 | 598 | 299 | 0.9 | 1.5 |
| SEP-12 | 5/10/00 | 5.7 | 8.2 | 1092 | 688 | 64 | 33.3 | 80.1 | 76 | 17 | 133 | 9.3 | 220 | 1 | 223 | 108 | 0.71 | 0.27 |
| SEP-12 | 8/21/00 | 5.4 | 8.4 | 930 | 594 | 418 | 17 | 51.6 | 77 | 19 | 95 | 9.3 | 266 | 4.8 | 190 | 85 | 0.66 | 0.69 |
| SEP-12 | 11/15/00 | 10.2 | 8.3 | 2060 | 1367 | 29 | 42 | 52.0 | 103 | 25 | 257 | 10 | 314 | 1 | 456 | 245 | 0.79 | 1.6 |
| SEP-12 | 2/28/01 | 10.1 | 8.1 | 1180 | 744 | 95 | 57 | 70.0 | 67 | 16 | 134 | 8.1 | 220 | 1 | 237 | 127 | 0.74 | 0.57 |
| SEP-12 | 5/17/01 | 8.7 | 8.3 | 1090 | 697 | 92 | 32 | 78.6 | 73 | 18 | 136 | 9.8 | 215 | 1 | 208 | 111 | 0.75 | 0.49 |
| SEP-12 | 8/1/01 | 7.4 | 8.2 | 1027 | 661 | 170 | 167 | 32.0 | 65 | 16 | 120 | 11 | 205 | 1 | 214 | 100 | 0.69 | 0.4 |
| | | | | | | | | | | | | | | | | | | |

Tab. 2-9

# Hydrometrics Surface Water Quality Results
## February 2000 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| | | | | | | | | | Dissolved | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Sample | DO | PH | SC | TDS | TSS | Turb. | Temp | Ca | Mg | Na | K | HCO3 | CO3 | SO4 | Cl | F | N |
| ID | Date | mg/l | | umhos/cm | mg/l | mg/l | NTU | (F) | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| | | | | | | | | | | | | | | | | | | |
| SEP-13 | 2/14/00 | 8.4 | 8.5 | 2330 | 1554 | 17 | 13.2 | 52.9 | 117 | 31 | 316 | 14 | 277 | 9.6 | 575 | 291 | 0.86 | 1.5 |
| SEP-13 | 2/14/00 | 8.3 | 8.5 | 2320 | 1534 | 17 | | 71.4 | 113 | 31 | 319 | 14 | 264 | 14.4 | 484 | 291 | 0.86 | 1.5 |
| SEP-13 | 5/10/00 | 5.9 | 8.5 | 1100 | 684 | 62 | 27.4 | 84.6 | 78 | 18 | 142 | 9.4 | 220 | 4.8 | 211 | 103 | 0.72 | 0.23 |
| SEP-13 | 8/21/00 | 6 | 8.3 | 931 | 602 | 427 | 17.6 | 79.7 | 78 | 18 | 94 | 9.3 | 255 | 1 | 172 | 81 | 0.65 | 0.69 |
| SEP-13 | 8/21/00 | 6 | 8.3 | 931 | 607 | 428 | | 51.8 | 74 | 18 | 94 | 9.3 | 265 | 1 | 178 | 82 | 0.65 | 0.71 |
| SEP-13 | 11/15/00 | 10.5 | 8.3 | 2100 | 1420 | 52 | 38 | 52.2 | 106 | 27 | 270 | 10 | 317 | 1 | 454 | 259 | 0.82 | 1.6 |
| SEP-13 | 2/28/01 | 10.4 | 8 | 1201 | 753 | 90 | 51.2 | 52.2 | 62 | 15 | 129 | 7.4 | 207 | 1 | 256 | 140 | 0.75 | 0.53 |
| SEP-13 | 2/28/01 | 10.6 | 8 | 1201 | 735 | 90 | | 65.8 | 63 | 15 | 125 | 7.4 | 221 | 1 | 217 | 142 | 0.71 | 0.69 |
| SEP-13 | 5/17/01 | 8 | 8.4 | 1099 | 704 | 66 | 28.3 | 79.3 | 70 | 17 | 135 | 9.1 | 211 | 2.4 | 244 | 131 | 0.75 | 0.64 |
| SEP-13 | 8/1/01 | 7.4 | 8.3 | 1030 | 687 | 180 | 130 | 32.0 | 64 | 16 | 120 | 11 | 217 | 1 | 220 | 97 | 0.71 | 0.36 |
| | | | | | | | | | | | | | | | | | | |
| AVERAGE | | 7.96 | 8.247 | 1387.75 | 893.7 | 136 | 45.223 | 64.9034 | 80.86 | 19.578 | 173.1 | 9.81 | 242.781 | 2.9094 | 282.05 | 155.5 | 0.745 | 1.1283 |
| MEDIAN | | 7.95 | 8.3 | 1123 | 709 | 92.5 | 28.3 | 71.15 | 74.5 | 17 | 136.5 | 9.5 | 227 | 1 | 237 | 128.5 | 0.72 | 0.655 |
| STD | | 1.8 | 0.188 | 489.117 | 335.3 | 120 | 43.117 | 16.3016 | 17.56 | 5.0295 | 73.58 | 1.69 | 36.5085 | 3.8292 | 112.36 | 71.3 | 0.064 | 1.0912 |
| MAXIMUM | | 11.5 | 8.6 | 2440 | 1574 | 437 | 210 | 88.7 | 119 | 32 | 334 | 14 | 342 | 14.4 | 598 | 315 | 0.9 | 6.1 |
| MINIMUM | | 5.2 | 7.9 | 927 | 519 | 17 | 11.8 | 32 | 57 | 14 | 89 | 7.3 | 195 | 1 | 172 | 73 | 0.64 | 0.15 |
| | | | | | | | | | | | | | | | | | | |
| **American Canal** | | | | | | | | | | | | | | | | | | |
| SEP-1 | 1/31/00 | 7.1 | 8.3 | 1402 | 841 | 67 | 29.6 | 78.3 | 85 | 19 | 191 | 7.3 | 244 | 1 | 232 | 167 | 0.74 | 1.1 |
| SEP-1 | 5/9/00 | 6.3 | 8.3 | 1120 | 723 | 107 | 25 | 83.8 | 85 | 18 | 171 | 10 | 224 | 1 | 227 | 102 | 0.73 | 0.47 |
| SEP-1 | 8/14/00 | 5.6 | 8.6 | 984 | 611 | 278 | 26 | 83.8 | 67 | 16 | 103 | 9.1 | 222 | 11 | 213 | 80 | 0.66 | 0.66 |
| SEP-1 | 8/14/00 | 5.7 | 8.6 | 987 | 626 | 275 | | 51.4 | 68 | 16 | 99 | 8.5 | 224 | 11 | 207 | 73 | 0.68 | 0.51 |
| SEP-1 | 11/10/00 | 8.1 | 8.2 | 1728 | 1177 | 307 | 27 | 61.0 | 106 | 26 | 211 | 11 | 338 | 1 | 310 | 206 | 0.68 | 1.8 |
| SEP-1 | 2/23/01 | 8.4 | 8.4 | 1299 | 805 | 86 | 40 | 71.6 | 66 | 15 | 128 | 7.2 | 244 | 4.8 | 199 | 143 | 0.75 | 0.8 |
| SEP-1 | 5/16/01 | 9.5 | 8.3 | 946 | 606 | 265 | 52.1 | 88.2 | 68 | 16 | 116 | 9.1 | 207 | 1 | 207 | 90 | 0.7 | 0.53 |
| SEP-1 | 7/31/01 | 9 | 8.2 | 1046 | 674 | 153 | 98.8 | 89.2 | 60 | 15 | 125 | 7.5 | 206 | 1 | 217 | 105 | 0.7 | 0.34 |
| SEP-1 | 7/31/01 | 8.9 | 8.3 | 1045 | 664 | 155 | 98.1 | 83.1 | 61 | 16 | 130 | 8.3 | 215 | 1 | 210 | 100 | 0.71 | 0.32 |
| | | | | | | | | | | | | | | | | | | |
| SEP-3 | 1/31/00 | 7.5 | 8.3 | 1400 | 853 | 64 | 29.6 | 79.0 | 91 | 21 | 193 | 8.6 | 240 | 1 | 235 | 160 | 0.71 | 1.3 |
| SEP-3 | 5/9/00 | 6.4 | 8.3 | 1123 | 722 | 103 | 25 | 83.7 | 85 | 18 | 168 | 9.5 | 226 | 1 | 225 | 115 | 0.73 | 0.67 |

Ta. . 2-9

# Hydrometrics Surface Water Quality Results
## February 2000 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| | | | | | | | | | Dissolved | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | Sample | DO | PH | SC | TDS | TSS | Turb. | Temp | Ca | Mg | Na | K | HCO3 | CO3 | SO4 | Cl | F | N |
| ID | Date | mg/l | | umhos/cm | mg/l | mg/l | NTU | (F) | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| | | | | | | | | | | | | | | | | | | |
| SEP-3 | 8/14/00 | 6 | 8.6 | 987 | 634 | 280 | 25 | 51.6 | 71 | 16 | 103 | 9.3 | 221 | 11 | 208 | 76 | 0.68 | 0.57 |
| SEP-3 | 11/10/00 | 8.1 | 8.2 | 1784 | 1208 | 294 | 28 | 63.5 | 113 | 29 | 225 | 11 | 342 | 1 | 335 | 222 | 0.7 | 2.2 |
| SEP-3 | 2/23/01 | 7.3 | 8.5 | 1339 | 830 | 98 | 40 | 71.4 | 73 | 16 | 158 | 8.6 | 224 | 7 | 245 | 168 | 0.74 | 1.2 |
| SEP-3 | 5/16/01 | 8.6 | 8.3 | 1001 | 638 | 228 | 51 | 81.3 | 67 | 16 | 124 | 9.7 | 211 | 1 | 226 | 106 | 0.69 | 0.53 |
| SEP-3 | 8/1/01 | 7.9 | 8.2 | 1046 | 673 | 194 | 157 | 80.6 | 63 | 16 | 124 | 10 | 220 | 1 | 194 | 106 | 0.68 | 0.56 |
| SEP-3 | 8/1/01 | 7.9 | 8.2 | 1046 | 680 | 187 | 152 | 75.9 | 64 | 16 | 125 | 11 | 214 | 1 | 212 | 104 | 0.7 | 0.56 |
| | | | | | | | | | | | | | | | | | | |
| SEP-7 | 1/31/00 | 7.7 | 8.3 | 1402 | 849 | 67 | 25.8 | 77.4 | 88 | 19 | 190 | 7.6 | 239 | 1 | 248 | 185 | 0.73 | 1.3 |
| SEP-7 | 5/9/00 | 7.4 | 8.4 | 1108 | 697 | 106 | 25 | 83.8 | 86 | 19 | 162 | 9.6 | 215 | 7 | 226 | 109 | 0.71 | 0.41 |
| SEP-7 | 8/14/00 | 5.7 | 8.6 | 956 | 603 | 286 | 24 | 51.6 | 72 | 17 | 100 | 9.1 | 229 | 4.8 | 187 | 78 | 0.69 | 0.53 |
| SEP-7 | 11/10/00 | 8.1 | 8.2 | 1771 | 1202 | 311 | 28 | 61.7 | 114 | 27 | 218 | 12 | 342 | 1 | 292 | 205 | 0.68 | 1.7 |
| SEP-7 | 2/23/01 | 7.3 | 8.4 | 1338 | 835 | 88 | 40 | 70.2 | 74 | 17 | 161 | 8.5 | 237 | 4.8 | 225 | 163 | 0.77 | 1.2 |
| SEP-7 | 5/16/01 | 8.7 | 8.2 | 996 | 629 | 214 | 54 | 70.2 | 69 | 16 | 126 | 10 | 210 | 1 | 231 | 117 | 0.71 | 0.59 |
| SEP-7 | 5/16/01 | 8.2 | 8.3 | 1000 | 637 | 223 | 49 | 91.6 | 68 | 16 | 123 | 9.7 | 203 | 1 | 235 | 103 | 0.69 | 0.62 |
| SEP-7 | 7/31/01 | 9.1 | 8.2 | 1045 | 660 | 166 | 101 | 78.8 | 61 | 16 | 128 | 7.7 | 207 | 1 | 199 | 103 | 0.67 | 0.21 |
| | | | | | | | | | | | | | | | | | | |
| **AVERAGE** | | 7.7 | 8.339 | 1190.304 | 761.4 | 193 | 54.382 | 73.94 | 76.3 | 18.043 | 145.2 | 9.24 | 236.348 | 3.3217 | 229.83 | 126.8 | 0.703 | 0.8309 |
| **MEDIAN** | | 7.9 | 8.3 | 1046 | 674 | 194 | 40 | 77.36 | 69 | 16 | 128 | 9.1 | 222 | 1 | 225 | 106 | 0.7 | 0.59 |
| **STD** | | 1.15 | 0.147 | 268.7465 | 190.3 | 84.9 | 40.635 | 12.1646 | 16.29 | 3.9598 | 39.02 | 1.24 | 42.8609 | 3.6391 | 36.768 | 45.16 | 0.027 | 0.5263 |
| **MAXIMUM** | | 9.5 | 8.6 | 1784 | 1208 | 311 | 157 | 91.58 | 114 | 29 | 225 | 12 | 342 | 11 | 335 | 222 | 0.77 | 2.2 |
| **MINIMUM** | | 5.6 | 8.2 | 946 | 603 | 64 | 24 | 51.44 | 60 | 15 | 99 | 7.2 | 203 | 1 | 187 | 73 | 0.66 | 0.21 |

Tal -10

# Hydrometrics Surface Water Metal Concentration Results
## February 2000 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| Sample ID | Sample Date | As Dis mg/l | | As T mg/l | | Cd Dis mg/l | | Cd T mg/l | | Cr Dis mg/l | | Cr T mg/l | | Cu Dis mg/l | | Cu T mg/l | | Fe Dis mg/l | | Fe T mg/l | | Pb Dis mg/l | | Pb T mg/l | | Se Dis mg/l | | Se T mg/l | | Zn Dis mg/l | | ZN T mg/l | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rio Grande | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SEP-2 | 02/14/00 | | | 0.013 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.48 | J4 | | | 0.003 | U | | | 0.005 | | | | 0.02 | U |
| SEP-2 | 05/10/00 | | | 0.007 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.2 | | | | 0.007 | | | | 0.005 | U | | | 0.028 | UJ1,J2 |
| SEP-2 | 08/21/00 | | | 0.005 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 9 | | | | 0.019 | | | | 0.005 | U | | | 0.05 | UJ1 |
| SEP-2 | 11/15/00 | | | 0.014 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.4 | | | | 0.004 | | | | 0.006 | | | | 0.043 | |
| SEP-2 | 02/28/01 | | | 0.007 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2.8 | | | | 0.003 | | | | 0.005 | U | | | 0.023 | |
| SEP-2 | 05/17/01 | | | 0.005 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2.1 | | | | 0.003 | U | | | 0.005 | U | | | 0.026 | |
| SEP-2 | 05/17/01 | | | 0.005 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2.1 | | | | 0.003 | | | | 0.005 | U | | | 0.02 | U |
| SEP-2 | 7/31/01 | 0.005 | | 0.005 | U | 0.005 | U | 0.01 | U | 0.025 | U | 0.025 | U | 0.1 | U | 3.9 | | 0.003 | U | 0.009 | | 0.005 | U | 0.005 | U | 0.02 | U,UJ4 | 0.024 | J4 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SEP-4 | 02/14/00 | | | 0.016 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.34 | J4 | | | 0.003 | U | | | 0.006 | | | | 0.02 | U |
| SEP-4 | 05/10/00 | | | 0.008 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.1 | | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-4 | 08/21/00 | | | 0.005 | U | | | 0.005 | U | | | 0.013 | | | | 0.025 | U | | | 12 | | | | 0.009 | | | | 0.005 | U | | | 0.046 | UJ1 |
| SEP-4 | 11/15/00 | | | 0.019 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.5 | | | | 0.008 | | | | 0.005 | | | | 0.045 | |
| SEP-4 | 02/28/01 | | | 0.008 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2.2 | | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-4 | 05/17/01 | | | 0.005 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.8 | | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-4 | 7/31/01 | 0.006 | | 0.005 | U | 0.005 | U | 0.01 | U | 0.025 | U | 0.025 | U | 0.1 | U | 2.1 | | 0.003 | U | 0.005 | | 0.005 | U | 0.005 | U | 0.02 | U,UJ4 | 0.02 | U,UJ4 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SEP-6 | 01/31/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.2 | | | | 0.005 | | | | 0.005 | U | | | 0.02 | U |
| SEP-6 | 05/09/00 | | | 0.007 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2 | | | | 0.004 | | | | 0.005 | U | | | 0.027 | UJ1,J2 |
| SEP-6 | 05/09/00 | | | 0.007 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.9 | | | | 0.003 | U | | | 0.005 | U | | | 0.022 | UJ1,J2 |
| SEP-6 | 08/14/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 5.8 | | | | 0.006 | | | | 0.005 | U | | | 0.026 | |
| SEP-6 | 11/10/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 7 | | | | 0.005 | | | | 0.005 | U | | | 0.03 | |
| SEP-6 | 02/23/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.7 | | | | 0.003 | U | | | 0.005 | U | | | 0.041 | UJ1 |
| SEP-6 | 02/23/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.9 | | | | 0.003 | J1 | | | 0.005 | U | | | 0.035 | UJ1 |
| SEP-6 | 05/16/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2.7 | J4 | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-6 | 8/1/01 | 0.005 | | 0.005 | U | 0.005 | U | 0.01 | U | 0.025 | U | 0.025 | U | 0.1 | U | 3.2 | | 0.003 | U | 0.004 | | 0.005 | U | 0.005 | U | 0.02 | U | 0.024 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SEP-9 | 02/14/00 | | | 0.008 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.66 | J4 | | | 0.003 | U | | | 0.005 | U | | | 0.023 | |
| SEP-9 | 05/10/00 | | | 0.011 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.92 | | | | 0.026 | | | | 0.005 | U | | | 0.036 | UJ1,J2 |
| SEP-9 | 08/21/00 | | | 0.007 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 4.6 | | | | 0.007 | | | | 0.005 | U | | | 0.046 | UJ1 |

# Hydrometrics Surface Water Metal Concentration Results
## February 2000 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| Sample ID | Sample Date | As Dis mg/l | | As T mg/l | | Cd Dis mg/l | | Cd T mg/l | | Cr Dis mg/l | | Cr T mg/l | | Cu Dis mg/l | | Cu T mg/l | | Fe Dis mg/l | | Fe T mg/l | | Pb Dis mg/l | | Pb T mg/l | | Se Dis mg/l | | Se T mg/l | | Zn Dis mg/l | | ZN T mg/l | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP-9 | 11/15/00 | | | 0.01 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.53 | | | | 0.003 | U | | | 0.005 | U | | | 0.05 | |
| SEP-9 | 02/28/01 | | | 0.006 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 3 | | | | 0.003 | U | | | 0.005 | U | | | 0.029 | |
| SEP-9 | 05/17/01 | | | 0.007 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.4 | | | | 0.003 | U | | | 0.005 | U | | | 0.025 | |
| SEP-9 | 7/31/01 | 0.005 | | 0.005 | U | 0.005 | U | 0.01 | U | 0.025 | U | * 0.025 | U | 1.3 | | 0.1 | U | 0.003 | | 0.003 | U | 0.005 | U | 0.005 | U | 0.02 | U,UJ4 | 0.02 | U,UJ4 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SEP-10 | 02/14/00 | | | 0.012 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.79 | J4 | | | 0.003 | U | | | 0.005 | | | | 0.02 | U |
| SEP-10 | 05/10/00 | | | 0.009 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.4 | | | | 0.005 | | | | 0.005 | U | | | 0.026 | UJ1,J2 |
| SEP-10 | 05/10/00 | | | 0.01 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.2 | | | | 0.006 | | | | 0.005 | U | | | 0.03 | UJ1,J2 |
| SEP-10 | 08/21/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 8.1 | | | | 0.008 | | | | 0.005 | U | | | 0.039 | UJ1 |
| SEP-10 | 11/15/00 | | | 0.019 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.74 | | | | 0.003 | U | | | 0.008 | | | | 0.039 | |
| SEP-10 | 02/28/01 | | | 0.005 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2.9 | | | | 0.003 | | | | 0.005 | U | | | 0.023 | |
| SEP-10 | 05/17/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.7 | | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-10 | 7/31/01 | 0.005 | U | 0.005 | U | 0.005 | U | 0.01 | U | 0.025 | U | 0.025 | U | 0.1 | U | 2.7 | | 0.003 | U | 0.005 | | 0.005 | U | 0.005 | U | 0.02 | U | 0.02 | U | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SEP-11 | 02/14/00 | | | 0.014 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.47 | J4 | | | 0.013 | | | | 0.005 | | | | 0.029 | |
| SEP-11 | 05/10/00 | | | 0.008 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.4 | | | | 0.003 | | | | 0.005 | U | | | 0.024 | UJ1,J2 |
| SEP-11 | 08/21/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 8.2 | | | | 0.009 | | | | 0.005 | U | | | 0.035 | UJ1 |
| SEP-11 | 11/15/00 | | | 0.013 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.67 | | | | 0.003 | U | | | 0.007 | | | | 0.035 | |
| SEP-11 | 11/15/00 | | | 0.013 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.66 | | | | 0.003 | U | | | 0.007 | | | | 0.04 | |
| SEP-11 | 02/28/01 | | | 0.005 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2.9 | | | | 0.004 | | | | 0.005 | U | | | 0.023 | |
| SEP-11 | 05/17/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2.1 | | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-11 | 7/31/01 | 0.005 | U | 0.005 | U | 0.005 | U | 0.01 | U | 0.025 | U | 0.025 | U | 0.1 | U | 3 | | 0.003 | U | 0.005 | | 0.005 | U | 0.005 | U | 0.02 | U | 0.023 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SEP-12 | 02/14/00 | | | 0.013 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.66 | J4 | | | 0.003 | U | | | 0.005 | | | | 0.02 | U |
| SEP-12 | 05/10/00 | | | 0.008 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.2 | | | | 0.004 | | | | 0.005 | U | | | 0.027 | UJ1,J2 |
| SEP-12 | 08/21/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 10 | | | | 0.013 | | | | 0.005 | U | | | 0.04 | UJ1 |
| SEP-12 | 11/15/00 | | | 0.014 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.84 | | | | 0.004 | | | | 0.005 | U | | | 0.034 | |
| SEP-12 | 02/28/01 | | | 0.007 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2.5 | | | | 0.003 | | | | 0.005 | U | | | 0.02 | U |
| SEP-12 | 05/17/01 | | | 0.005 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.9 | | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-12 | 8/1/01 | 0.005 | | 0.005 | U | 0.005 | U | 0.01 | U | 0.025 | U | 0.025 | U | 0.1 | U | 3.1 | | 0.003 | U | 0.004 | | 0.005 | U | 0.005 | U | 0.02 | U | 0.026 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Table 2-10

# Hydrometrics Surface Water Metal Concentration Results
## February 2000 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| Sample ID | Sample Date | As Dis mg/l | | As T mg/l | | Cd Dis mg/l | | Cd T mg/l | | Cr Dis mg/l | | Cr T mg/l | | Cu Dis mg/l | | Cu T mg/l | | Fe Dis mg/l | | Fe T mg/l | | Pb Dis mg/l | | Pb T mg/l | | Se Dis mg/l | | Se T mg/l | | Zn Dis mg/l | | ZN T mg/l | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP-13 | 02/14/00 | | | 0.014 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.46 | J4 | | | 0.003 | | | | 0.005 | | | | 0.02 | U |
| SEP-13 | 02/14/00 | | | 0.013 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 0.6 | J4 | | | 0.003 | U | | | 0.005 | | | | 0.02 | U |
| SEP-13 | 05/10/00 | | | 0.008 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.2 | | | | 0.003 | U | | | 0.005 | U | | | 0.023 | UJ1,J2 |
| SEP-13 | 08/21/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 9.7 | | | | 0.008 | | | | 0.005 | U | | | 0.04 | UJ1 |
| SEP-13 | 08/21/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 9.6 | | | | 0.007 | | | | 0.005 | U | | | 0.036 | UJ1 |
| SEP-13 | 11/15/00 | | | 0.015 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.3 | | | | 0.009 | | | | 0.005 | | | | 0.043 | |
| SEP-13 | 02/28/01 | | | 0.008 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2 | | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-13 | 02/28/01 | | | 0.008 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2 | | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-13 | 05/17/01 | | | 0.005 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.7 | | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-13 | 8/1/01 | 0.005 | U | 0.005 | U | 0.005 | U | 0.01 | U | 0.025 | U | 0.025 | U | 0.1 | U | 3.1 | | 0.003 | U | 0.005 | | 0.005 | U | 0.005 | U | 0.02 | U | 0.022 | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AVERAGE | | 0.005 | | 0.008 | | 0.005 | | 0.006 | | 0.025 | | 0.0119 | | 0.25 | | 0.35313 | | 0.003 | | 2.3791 | | 0.005 | | 0.0051 | | 0.02 | | 0.0073 | | 0 | | 0.0289 | |
| MEDIAN | | 0.005 | | 0.007 | | 0.005 | | 0.005 | | 0.025 | | 0.01 | | 0.1 | | 0.025 | | 0.003 | | 1.4 | | 0.005 | | 0.003 | | 0.02 | | 0.005 | | 0 | | 0.026 | |
| STD | | 4E-04 | | 0.004 | | 6E-11 | | 0.002 | | 5E-10 | | 0.005 | | 0.42 | | 0.95481 | | 4E-11 | | 2.8501 | | 6E-11 | | 0.004 | | 2E-10 | | 0.0058 | | 0 | | 0.0094 | |
| MAXIMUM | | 0.006 | | 0.019 | | 0.005 | | 0.01 | | 0.025 | | 0.025 | | 1.3 | | 3.9 | | 0.003 | | 12 | | 0.005 | | 0.026 | | 0.02 | | 0.026 | | 0 | | 0.05 | |
| MINIMUM | | 0.005 | | 0.005 | | 0.005 | | 0.005 | | 0.025 | | 0.01 | | 0.1 | | 0.025 | | 0.003 | | 0.003 | | 0.005 | | 0.003 | | 0.02 | | 0.005 | | 0 | | 0.02 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| American Canal | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SEP-1 | 01/31/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.1 | | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-1 | 05/09/00 | | | 0.007 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.7 | | | | 0.007 | | | | 0.005 | U | | | 0.03 | UJ1,J2 |
| SEP-1 | 08/14/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 5.9 | | | | 0.006 | | | | 0.005 | U | | | 0.034 | |
| SEP-1 | 08/14/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 5.6 | | | | 0.005 | | | | 0.005 | U | | | 0.024 | |
| SEP-1 | 11/10/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 7.7 | | | | 0.014 | | | | 0.005 | U | | | 0.025 | |
| SEP-1 | 02/23/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.6 | | | | 0.003 | U | | | 0.005 | U | | | 0.033 | UJ1 |
| SEP-1 | 05/16/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 3 | J4 | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-1 | 7/31/01 | 0.005 | U | 0.005 | U | 0.005 | U | 0.01 | U | 0.025 | U | 0.025 | U | 0.1 | U | 2.4 | | 0.003 | U | 0.004 | | 0.005 | U | 0.005 | U | 0.02 | U,UJ4 | 0.028 | J4 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SEP-3 | 01/31/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.2 | | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-3 | 05/09/00 | | | 0.007 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.9 | | | | 0.003 | | | | 0.005 | U | | | 0.029 | UJ1,J2 |
| SEP-3 | 08/14/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 6 | | | | 0.005 | | | | 0.005 | U | | | 0.023 | |
| SEP-3 | 11/10/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 8.4 | | | | 0.005 | | | | 0.005 | U | | | 0.028 | |

Tab.. 2-10

# Hydrometrics Surface Water Metal Concentration Results
## February 2000 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| Sample ID | Sample Date | As Dis mg/l | | As T mg/l | | Cd Dis mg/l | | Cd T mg/l | | Cr Dis mg/l | | Cr T mg/l | | Cu Dis mg/l | | Cu T mg/l | | Fe Dis mg/l | | Fe T mg/l | | Pb Dis mg/l | | Pb T mg/l | | Se Dis mg/l | | Se T mg/l | | Zn Dis mg/l | | ZN T mg/l | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEP-3 | 02/23/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.8 | | | | 0.003 | J1 | | | 0.005 | U | | | 0.028 | UJ1 |
| SEP-3 | 05/16/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2.4 | J4 | | | 0.003 | U | | | 0.005 | U | | | 0.02 | |
| SEP-3 | 8/1/01 | 0.005 | | 0.005 | U | 0.005 | U | 0.01 | U | 0.025 | U | 0.025 | U | 0.1 | U | 3.1 | | 0.003 | U | 0.004 | | 0.005 | U | 0.005 | U | 0.02 | U | 0.021 | | | | | |
| SEP-7 | 01/31/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1 | | | | 0.004 | | | | 0.005 | U | | | 0.04 | |
| SEP-7 | 05/09/00 | | | 0.007 | | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2 | | | | 0.006 | | | | 0.005 | U | | | 0.03 | UJ1,J2 |
| SEP-7 | 08/14/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 6.3 | | | | 0.005 | | | | 0.005 | U | | | 0.043 | |
| SEP-7 | 11/10/00 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 8.7 | | | | 0.006 | | | | 0.005 | U | | | 0.028 | |
| SEP-7 | 02/23/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 1.9 | | | | 0.004 | J1 | | | 0.005 | U | | | 0.037 | UJ1 |
| SEP-7 | 05/16/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 2.2 | J4 | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-7 | 05/16/01 | | | 0.005 | U | | | 0.005 | U | | | 0.01 | U | | | 0.025 | U | | | 3.4 | J4 | | | 0.003 | U | | | 0.005 | U | | | 0.02 | U |
| SEP-7 | 7/31/01 | 0.005 | U | 0.005 | U | 0.005 | U | 0.01 | U | 0.025 | U | 0.025 | U | 0.1 | U | 2.8 | | 0.003 | U | 0.003 | | 0.005 | U | 0.005 | U | 0.02 | U,UJ4 | 0.02 | U,UJ4 | | | | |
| AVERAGE | | 0.005 | | 0.005 | | 0.005 | | 0.006 | | 0.025 | | 0.012 | | 0.1 | | 0.38261 | | 0.003 | | 3.2092 | | 0.005 | | 0.0047 | | 0.02 | | 0.0073 | | 0 | | 0.0276 | |
| MEDIAN | | 0.005 | | 0.005 | | 0.005 | | 0.005 | | 0.025 | | 0.01 | | 0.1 | | 0.025 | | 0.003 | | 2 | | 0.005 | | 0.005 | | 0.02 | | 0.005 | | 0 | | 0.028 | |
| STD | | 8E-11 | | 7E-04 | | 8E-11 | | 0.002 | | 0 | | 0.0052 | | 0 | | 0.95001 | | 0 | | 2.7407 | | 8E-11 | | 0.0024 | | 3E-10 | | 0.0063 | | 0 | | 0.0071 | |
| MAXIMUM | | 0.005 | | 0.007 | | 0.005 | | 0.01 | | 0.025 | | 0.025 | | 0.1 | | 3.1 | | 0.003 | | 8.7 | | 0.005 | | 0.014 | | 0.02 | | 0.028 | | 0 | | 0.043 | |
| MINIMUM | | 0.005 | | 0.005 | | 0.005 | | 0.005 | | 0.025 | | 0.01 | | 0.1 | | 0.025 | | 0.003 | | 0.003 | | 0.005 | | 0.003 | | 0.02 | | 0.005 | | 0 | | 0.02 | |

Note:

J The associated numerical value is an estimated quantity because quality control criteria were not met

- J2 calibration range exceeded or significant deviation from known values. Possible bias.
- J3 Holding time not met. Indicates low bias.
- J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.

- UJ1 Blank contamination. Indicates possible high bias and/or false positive.
- UJ2 Calibration range exceeded or significant deviation from known value.
- UJ3 Holding times not met. Indicates low bias.
- UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.

A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals

T Total Metals

Ta. -11

# Summary of Hydrometrics Surface Water Analytical Results
## February 2000 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| | | | | | | | | Dissolved | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample | DO | PH | SC | TDS | TSS | Turb | Temp | Ca | Mg | Na | K | HCO3 | CO3 | SO4 | Cl | F | N |
| ID | mg/l | | umhos/cm | mg/l | mg/l | NTU | (F) | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| **Rio Grande** | | | | | | | | | | | | | | | | | |
| Ave | 8.0 | 8.2 | 1388 | 894 | 136 | 45 | 65 | 80.9 | 19.6 | 173.1 | 9.8 | 242.8 | 2.9 | 282.0 | 155.5 | 0.7 | 1.1 |
| Max | 11.5 | 8.6 | 2440 | 1574 | 437 | 210 | 89 | 119.0 | 32.0 | 334.0 | 14.0 | 342.0 | 14.4 | 598.0 | 315.0 | 0.9 | 6.1 |
| Min | 5.2 | 7.9 | 927 | 519 | 17 | 12 | 32 | 57.0 | 14.0 | 89.0 | 7.3 | 195.0 | 1.0 | 172.0 | 73.0 | 0.6 | 0.2 |
| **American Canal** | | | | | | | | | | | | | | | | | |
| Ave | 7.7 | 8.3 | 1190 | 761 | 193 | 54 | 74 | 76.3 | 18.0 | 145.2 | 9.2 | 236.3 | 3.3 | 229.8 | 126.8 | 0.7 | 0.8 |
| Max | 9.5 | 8.6 | 1784 | 1208 | 311 | 157 | 92 | 114.0 | 29.0 | 225.0 | 12.0 | 342.0 | 11.0 | 335.0 | 222.0 | 0.8 | 2.2 |
| Min | 5.6 | 8.2 | 946 | 603 | 64 | 24 | 51 | 60.0 | 15.0 | 99.0 | 7.2 | 203.0 | 1.0 | 187.0 | 73.0 | 0.7 | 0.2 |

| Sample | As Dis | As T | Cd Dis | Cd T | Cr Dis | Cr T | Cu Dis | Cu T | Fe Dis | Fe T | Pb Dis | Pb T | Se Dis | Se T | Zn Dis | ZN T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| **Rio Grande** | | | | | | | | | | | | | | | | |
| Ave | 0.005 | 0.008 | 0.005 | 0.006 | 0.025 | 0.012 | 0.250 | 0.353 | 0.003 | 2.379 | 0.005 | 0.005 | 0.020 | 0.007 | 0.000 | 0.029 |
| Max | 0.006 | 0.019 | 0.005 | 0.010 | 0.025 | 0.025 | 1.300 | 3.900 | 0.003 | 12.000 | 0.005 | 0.026 | 0.020 | 0.026 | 0.000 | 0.050 |
| Min | 0.005 | 0.005 | 0.005 | 0.005 | 0.025 | 0.010 | 0.100 | 0.025 | 0.003 | 0.003 | 0.005 | 0.003 | 0.020 | 0.005 | 0.000 | 0.020 |
| **American Canal** | | | | | | | | | | | | | | | | |
| Ave | 0.005 | 0.005 | 0.005 | 0.006 | 0.025 | 0.012 | 0.100 | 0.383 | 0.003 | 3.209 | 0.005 | 0.005 | 0.020 | 0.007 | 0.000 | 0.028 |
| Max | 0.005 | 0.007 | 0.005 | 0.010 | 0.025 | 0.025 | 0.100 | 3.100 | 0.003 | 8.700 | 0.005 | 0.014 | 0.020 | 0.028 | 0.000 | 0.043 |
| Min | 0.005 | 0.005 | 0.005 | 0.005 | 0.025 | 0.010 | 0.100 | 0.025 | 0.003 | 0.003 | 0.005 | 0.003 | 0.020 | 0.005 | 0.000 | 0.020 |

**Note:**

| | |
|---|---|
| **Dis** | Dissolved |
| **T** | Total Metals |
| **N** | Nitrate +Nitrite |

# Table 2-12

## Summary of Streambed Sediment Sample Results
## August 1999 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| Site | Date | Type Name | Arsenic | | Cadmium | | Lead | |
|---|---|---|---|---|---|---|---|---|
| | | | mg/kg | | mg/kg | | mg/kg | |
| | | | | | | | | |
| SEP-2-SED | 8/20/99 | SEDIMENT/SOIL | 10 | U | 12 | | 160 | |
| SEP-2-SED | 11/2/99 | SEDIMENT/SOIL | 10 | U | 10 | U | 57 | |
| SEP-2-SED | 2/14/00 | SEDIMENT/SOIL | 10 | U | 15 | J4 | 48 | |
| SEP-2-SED | 5/10/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 20 | |
| SEP-2-SED | 8/21/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 85 | |
| SEP-2-SED | 8/21/00 | SEDIMENT/SOIL | 17 | | 10 | U | 92 | |
| SEP-2-SED | 11/15/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 58 | |
| SEP-2-SED | 2/28/01 | SEDIMENT/SOIL | 10 | U | 10 | U | 25 | |
| SEP-2-SED | 5/17/01 | SEDIMENT/SOIL | 19 | | 11 | | 53 | |
| SEP-2-SED | 7/31/01 | SEDIMENT/SOIL | 21 | | 10 | U | 130 | |
| | | | | | | | | |
| **Average** | | | 12.7 | | 10.8 | | 72.8 | |
| **Median** | | | 10.0 | | 10.0 | | 57.5 | |
| **Standard Deviation** | | | 4.4 | | 1.6 | | 44.6 | |
| **Minimum** | | | 10.0 | | 10.0 | | 20.0 | |
| **Maximum** | | | 21.0 | | 15.0 | | 160.0 | |
| | | | | | | | | |
| SEP-4-SED | 8/20/99 | SEDIMENT/SOIL | 10 | U | 10 | U | 28 | |
| SEP-4-SED | 11/2/99 | SEDIMENT/SOIL | 10 | U | 10 | U | 66 | |
| SEP-4-SED | 2/14/00 | SEDIMENT/SOIL | 10 | U | 10 | U,UJ4 | 19 | |
| SEP-4-SED | 5/10/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 36 | |
| SEP-4-SED | 8/21/00 | SEDIMENT/SOIL | 24 | | 10 | U | 170 | |
| SEP-4-SED | 11/15/00 | SEDIMENT/SOIL | 23 | | 18 | | 140 | |
| SEP-4-SED | 2/28/01 | SEDIMENT/SOIL | 30 | | 10 | U | 63 | |
| SEP-4-SED | 2/28/01 | SEDIMENT/SOIL | 25 | | 10 | U | 63 | |
| SEP-4-SED | 5/17/01 | SEDIMENT/SOIL | 20 | | 13 | | 40 | |
| SEP-4-SED | 7/31/01 | SEDIMENT/SOIL | 16 | | 10 | U | 63 | |
| SEP-4-SED | 7/31/01 | SEDIMENT/SOIL | 22 | | 14 | | 60 | |
| | | | | | | | | |
| **Average** | | | 18.2 | | 11.4 | | 68.0 | |
| **Median** | | | 20.0 | | 10.0 | | 63.0 | |
| **Standard Deviation** | | | 7.3 | | 2.6 | | 46.4 | |
| **Minimum** | | | 10.0 | | 10.0 | | 19.0 | |
| **Maximum** | | | 30.0 | | 18.0 | | 170.0 | |
| | | | | | | | | |
| SEP-9-SED | 8/20/99 | SEDIMENT/SOIL | 10 | U | 10 | U | 29 | |
| SEP-9-SED | 11/2/99 | SEDIMENT/SOIL | 10 | U | 10 | U | 64 | |
| SEP-9-SED | 2/14/00 | SEDIMENT/SOIL | 10 | U | 10 | U,UJ4 | 20 | |
| SEP-9-SED | 5/10/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 58 | |
| SEP-9-SED | 8/21/00 | SEDIMENT/SOIL | 12 | | 10 | U | 56 | |
| SEP-9-SED | 11/15/00 | SEDIMENT/SOIL | 15 | | 10 | U | 280 | |
| SEP-9-SED | 2/28/01 | SEDIMENT/SOIL | 44 | | 14 | | 172 | |
| SEP-9-SED | 5/17/01 | SEDIMENT/SOIL | 14 | | 11 | | 37 | |
| SEP-9-SED | 7/31/01 | SEDIMENT/SOIL | 24 | | 10 | U | 120 | |
| | | | | | | | | |

# Table 2-12

## Summary of Streambed Sediment Sample Results
## August 1999 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| Site | Date | Type Name | Arsenic | | Cadmium | | Lead | |
|---|---|---|---|---|---|---|---|---|
| | | | mg/kg | | mg/kg | | mg/kg | |
| | | | | | | | | |
| **Average** | | | 16.6 | | 10.6 | | 92.9 | |
| **Median** | | | 12.0 | | 10.0 | | 58.0 | |
| **Standard Deviation** | | | 11.2 | | 1.3 | | 85.1 | |
| **Minimum** | | | 10.0 | | 10.0 | | 20.0 | |
| **Maximum** | | | 44.0 | | 14.0 | | 280.0 | |
| | | | | | | | | |
| SEP-10-SED | 8/20/99 | SEDIMENT/SOIL | 10 | U | 10 | U | 21 | |
| SEP-10-SED | 11/2/99 | SEDIMENT/SOIL | 21 | | 10 | U | 35 | |
| SEP-10-SED | 2/14/00 | SEDIMENT/SOIL | 10 | U | 10 | U,UJ4 | 12 | |
| SEP-10-SED | 5/10/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 33 | |
| SEP-10-SED | 8/21/00 | SEDIMENT/SOIL | 50 | | 10 | U | 120 | |
| SEP-10-SED | 11/15/00 | SEDIMENT/SOIL | 28 | | 10 | U | 39 | |
| SEP-10-SED | 11/15/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 39 | |
| SEP-10-SED | 2/28/01 | SEDIMENT/SOIL | 10 | U | 10 | U | 20 | |
| SEP-10-SED | 5/17/01 | SEDIMENT/SOIL | 35 | | 10 | U | 53 | |
| SEP-10-SED | 7/31/01 | SEDIMENT/SOIL | 26 | | 12 | | 51 | |
| | | | | | | | | |
| **Average** | | | 21.0 | | 10.2 | | 42.3 | |
| **Median** | | | 15.5 | | 10.0 | | 37.0 | |
| **Standard Deviation** | | | 13.8 | | 0.6 | | 30.3 | |
| **Minimum** | | | 10.0 | | 10.0 | | 12.0 | |
| **Maximum** | | | 50.0 | | 12.0 | | 120.0 | |
| | | | | | | | | |
| SEP-11-SED | 8/20/99 | SEDIMENT/SOIL | 10 | | 10 | U | 40 | |
| SEP-11-SED | 11/2/99 | SEDIMENT/SOIL | 11 | | 10 | U | 140 | |
| SEP-11-SED | 2/14/00 | SEDIMENT/SOIL | 10 | U | 10 | U,UJ4 | 34 | |
| SEP-11-SED | 5/10/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 19 | |
| SEP-11-SED | 8/21/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 74 | |
| SEP-11-SED | 11/15/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 42 | |
| SEP-11-SED | 2/28/01 | SEDIMENT/SOIL | 36 | | 10 | U | 65 | |
| SEP-11-SED | 5/17/01 | SEDIMENT/SOIL | 26 | | 10 | U | 56 | |
| SEP-11-SED | 7/31/01 | SEDIMENT/SOIL | 12 | | 10 | U | 50 | |
| | | | | | | | | |
| **Average** | | | 15.0 | | 10.0 | | 57.8 | |
| **Median** | | | 10.0 | | 10.0 | | 50.0 | |
| **Standard Deviation** | | | 9.4 | | 0.0 | | 35.0 | |
| **Minimum** | | | 10.0 | | 10.0 | | 19.0 | |
| **Maximum** | | | 36.0 | | 10.0 | | 140.0 | |
| | | | | | | | | |
| SEP-12-SED | 8/20/99 | SEDIMENT/SOIL | 17 | | 10 | U | 24 | |
| SEP-12-SED | 11/2/99 | SEDIMENT/SOIL | 10 | U | 10 | U | 54 | |
| SEP-12-SED | 2/14/00 | SEDIMENT/SOIL | 12 | | 12 | J4 | 23 | |
| SEP-12-SED | 5/10/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 20 | |
| SEP-12-SED | 8/21/00 | SEDIMENT/SOIL | 11 | | 10 | U | 46 | |
| SEP-12-SED | 11/15/00 | SEDIMENT/SOIL | 10 | U | 10 | U | 24 | |
| SEP-12-SED | 2/28/01 | SEDIMENT/SOIL | 33 | | 10 | U | 73 | |
| SEP-12-SED | 5/17/01 | SEDIMENT/SOIL | 22 | | 11 | | 59 | |
| SEP-12-SED | 7/31/01 | SEDIMENT/SOIL | 20 | | 10 | U | 68 | |

# Table 2-12

## Summary of Streambed Sediment Sample Results
## August 1999 Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| Site | Date | Type Name | Arsenic | | Cadmium | | Lead | |
|---|---|---|---|---|---|---|---|---|
| | | | mg/kg | | mg/kg | | mg/kg | |
| | | | | | | | | |
| | | | | | | | | |
| **Average** | | | 16.1 | | 10.3 | | 43.4 | |
| **Median** | | | 12.0 | | 10.0 | | 46.0 | |
| **Standard Deviation** | | | 7.8 | | 0.7 | | 21.1 | |
| **Minimum** | | | 10.0 | | 10.0 | | 20.0 | |
| **Maximum** | | | 33.0 | | 12.0 | | 73.0 | |
| | | | | | | | | |
| SEP-13-SED | 8/20/99 | SEDIMENT/SOIL | 10 | U | 10 | U | 31 | |
| SEP-13-SED | 11/2/99 | SEDIMENT/SOIL | 21 | | 13 | | 51 | |
| SEP-13-SED | 2/14/00 | SEDIMENT/SOIL | 10 | U | 12 | J4 | 66 | |
| SEP-13-SED | 5/10/00 | SEDIMENT/SOIL | 10 | | 10 | U | 40 | |
| SEP-13-SED | 8/21/00 | SEDIMENT/SOIL | 14 | | 10 | U | 380 | |
| SEP-13-SED | 11/15/00 | SEDIMENT/SOIL | 33 | | 10 | U | 100 | |
| SEP-13-SED | 2/28/01 | SEDIMENT/SOIL | 20 | | 10 | U | 58 | |
| SEP-13-SED | 5/17/01 | SEDIMENT/SOIL | 30 | | 10 | U | 66 | |
| SEP-13-SED | 5/17/01 | SEDIMENT/SOIL | 28 | | 10 | U | 59 | |
| SEP-13-SED | 8/1/01 | SEDIMENT/SOIL | 32 | | 10 | U | 150 | |
| SEP-13-SED | 8/1/01 | SEDIMENT/SOIL | 22 | | 10 | U | 118 | |
| SEP-13-SED | 8/1/01 | SEDIMENT/SOIL | 32 | | 13 | | 160 | |
| | | | | | | | | |
| **Average** | | | 21.8 | | 10.7 | | 106.6 | |
| **Median** | | | 21.5 | | 10.0 | | 66.0 | |
| **Standard Deviation** | | | 9.2 | | 1.2 | | 95.7 | |
| **Minimum** | | | 10.0 | | 10.0 | | 31.0 | |
| **Maximum** | | | 33.0 | | 13.0 | | 380.0 | |

Note

See Figure 3-31 for all sample locations.

All concentrations in milligrams per kilogram (mg/kg).

(U) Concentration is less than the detection limit indicated

## Table 2-13

## IBWC Rio Grande Monthly Mean Flow Volumes
## January 2000 Through June 2001
## Asarco El Paso Smelter, Phase III RI

| Date Measured | Pump House Below American Dam cubic meters/second | Courchesne Bridge cubic meters/second | Diversion at American Canal cubic meters/second |
|---|---|---|---|
| | | | |
| 01/01/00 | 0.19 | 5.22 | 5.16 |
| 02/01/00 | 0.21 | 4.86 | 4.92 |
| 03/01/00 | 2.58 | 22.15 | 17.88 |
| 04/01/00 | 5.21 | 17.08 | 11.40 |
| 05/01/00 | 2.24 | 18.80 | 16.08 |
| 06/01/00 | 6.99 | 33.72 | 23.39 |
| 07/01/00 | 6.45 | 29.95 | 22.34 |
| 08/01/00 | 5.87 | 29.69 | 21.86 |
| 09/01/00 | 3.36 | 19.71 | 16.12 |
| 10/01/00 | 0.58 | 11.79 | 11.02 |
| 11/01/00 | 0.45 | 5.67 | 5.35 |
| 12/01/00 | 1.81 | 3.62 | 2.15 |
| 01/01/01 | 1.24 | 2.88 | 2.20 |
| 02/01/01 | 0.56 | 8.90 | 9.85 |
| 03/01/01 | 3.11 | 24.55 | 19.17 |
| 04/01/01 | 5.22 | 22.19 | 15.54 |
| 05/01/01 | 2.31 | 19.54 | 16.28 |
| 06/01/01 | 5.48 | 31.05 | 23.85 |

Tab 14

# Groundwater Elevations in Wells Adjacent to the Rio Grande and Historical Smeltertown
## February 1995 through August 2001
## ASARCO El Paso Smelter, Phase III RI

| Date Measured | Well Identifier | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | EP-4 | EP-5 | EP-6 | EP-7 | EP-60 | EP-61 | EP-62 | EP-63 | EP-64 | EP-65 | EP-66 |
| | Adjiacent to Rio Grande | | | | Historical Smeltertown | | | | | | |
| 02/10/95 | 02/25/10 | 3709.28 | 3708.21 | 3714.88 | 3712.07 | 3712.11 | 3711.98 | 3711.44 | 3712.5 | 3705.39 | 3711.36 |
| 05/19/95 | 02/26/10 | 3710.47 | 3709.41 | 3716.05 | 3713.27 | 3713.11 | 3713.29 | 3712.77 | 3713.77 | 3712.23 | 3712.63 |
| 08/21/95 | 02/27/10 | 3711.06 | 3710.37 | 3717.02 | 3714.41 | 3713.98 | 3713.95 | 3713.5 | 3715 | 3713.5 | 3713.67 |
| 11/17/95 | 02/25/10 | 3709.39 | 3708.45 | 3715.03 | 3712.45 | 3711.97 | 3712.04 | 3711.54 | 3712.67 | 3708.57 | 3715.5 |
| 02/21/96 | 02/25/10 | 3709.21 | 3708.09 | 3714.58 | 3712.15 | 3712.02 | 3711.94 | 3711.47 | 3712.44 | 3708.54 | 3711.33 |
| 05/10/96 | 02/26/10 | 3710.1 | 3708.93 | 3715.51 | 3713.18 | 3713.03 | 3713 | 3712.49 | 3713.48 | 3711.58 | 3712.45 |
| 08/14/96 | 02/26/10 | 3711.28 | 3709.45 | 3715.77 | 3713.34 | NM | 3713.18 | 3712.71 | 3713.69 | NM | 3712.65 |
| 11/11/96 | 02/26/10 | 3710.21 | 3708.21 | 3714.93 | 3712.32 | 3711.15 | 3711.08 | 3710.22 | 3711.85 | 3709.07 | 3710.9 |
| 02/08/97 | 02/25/10 | 3710.05 | 3708.28 | 3714.89 | 3712.25 | 3711.28 | 3711.05 | 3710.14 | 3711.76 | 3708.62 | 3710.98 |
| 05/13/97 | 02/26/10 | 3710.04 | 3708.92 | 3715.42 | 3713.02 | 3713.27 | 3713.29 | 3712.64 | 3713.74 | 3713.15 | 3712.6 |
| 08/08/97 | 02/26/10 | 3710.39 | 3709.52 | 3716.08 | 3713.52 | 3713.37 | 3713.32 | 3712.9 | 3713.82 | 3713.14 | 3712.86 |
| 11/05/97 | 02/25/10 | 3710.35 | 3708.42 | 3714.45 | 3712.5 | 3711.15 | 3711.09 | 3710.22 | 3711.95 | 3710.42 | 3711.03 |
| 02/01/98 | 02/26/10 | 3710.66 | 3708.61 | 3714.1 | 3712.35 | 3711.11 | 3711 | 3710.1 | 3711.73 | 3710.66 | 3711.67 |
| 05/01/98 | 02/26/10 | 3709.86 | 3708.74 | 3715.16 | 3713.3 | 3712.22 | 3713.02 | 3712.57 | 3713.55 | 3712.87 | 3712.51 |
| 08/06/98 | 02/26/10 | 3710.39 | 3709.68 | 3716.23 | 3713.48 | 3712.74 | 3713.33 | 3712.85 | 3713.8 | 3713.07 | 3712.79 |
| 11/07/98 | 02/26/10 | 3710.57 | 3709.54 | 3716.1 | 3713.16 | 3712.25 | 3712.93 | 3712.42 | 3713.34 | 3712.8 | 3712.44 |
| 02/06/99 | 02/25/10 | 3711.07 | 3710.24 | 3716.92 | 3713.42 | 3712.2 | 3713.34 | 3712.94 | 3713.66 | 3712.72 | 3712.89 |
| 05/12/99 | 02/23/10 | 3709.89 | 3708.94 | 3713.38 | 3713.14 | 3712.44 | 3713.19 | 3712.69 | 3713.65 | 3712.85 | 3713.46 |
| 08/06/99 | 02/27/10 | 3710.45 | 3709.69 | 3716.31 | 3713.43 | 3713.68 | 3713.6 | 3713.12 | 3716.11 | 3713.59 | 3712.92 |
| 11/04/99 | 02/26/10 | 3709.15 | 3708.18 | 3714.57 | 3712.32 | 3711.81 | 3712.12 | 3711.65 | 3712.74 | 3711.86 | 3711.58 |
| 02/01/00 | 02/26/10 | NM | 3707.96 | 3714.65 | 3712.05 | 3711.69 | 3712.07 | 3711.65 | 3712.52 | 3711.67 | 3711.54 |
| 05/01/00 | 02/27/10 | 3710.09 | 3708.82 | 3715.64 | 3712.78 | 3712.54 | 3712.65 | 3712.28 | 3713.17 | 3712.46 | 3712.22 |
| 08/06/00 | 02/27/10 | 3709.81 | 3709.22 | 3715.86 | 3712.95 | 3713.16 | 3713.1 | 3712.63 | 3713.61 | 3712.89 | 3712.49 |
| 11/01/00 | 02/26/10 | 3709.05 | 3708.48 | 3714.77 | 3712.07 | 3712.03 | 3712.02 | 3711.58 | 3712.62 | 3711.67 | 3711.47 |
| 02/01/01 | 02/26/10 | 3709.22 | 3707.99 | 3714.7 | 3711.92 | 3712.288 | 3712.14 | 3711.67 | 3712.7 | 3711.954 | 3711.43 |
| 05/01/01 | 02/26/10 | 3709.7 | 3708.7 | 3715.26 | 3712.65 | 3712.902 | 3712.79 | 3712.37 | 3713.29 | 3712.61 | 3712.17 |
| 08/06/01 | 02/27/10 | 3710.15 | 3709.24 | 3715.95 | 3712.96 | 3713.33 | 3713.2 | 3712.74 | 3713.66 | 3713.04 | 3712.5 |

Notes:

NM: Not Measured.

All values are feet above mean sea level.

See Figure 3-31 for well locations.

Ta. -15

# Summary of Hydrometrics On-Site Ponds Surface Water Quality Results
## August 1997Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| Sample ID | Sample Date | DO mg/l | PH | SC umhos/cm | TDS mg/l | TSS mg/l | Turb NTU | Temp oF | Dissolved Ca mg/l | Mg mg/l | Na mg/l | K mg/l | HCO3 mg/l | CO3 mg/l | SO4 mg/l | Cl mg/l | F mg/l | N mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POND 1 | 12/22/97 | | 7.5 | 27200 | 25974 | 6.9 | | 48.4 | 439 | 144 | 7724 | 373 | 176 | 1 | 16043 | 1002 | 23 | 20 |
| POND 1 | 2/19/98 | 8.2 | 7.7 | 25600 | 24898 | 8.8 | | 47.4 | 411 | 135 | 7362 | 329 | 154 | 1 | 14493 | 1134 | 21 | 23 |
| POND 1 | 5/19/98 | 5.3 | 7.9 | 50100 | 53664 | 21 | | 75.4 | 526 | 274 | 16140 | 715 | 256 | 1 | 36326 | 2853 | 30 | 34 |
| POND 1 | 8/18/98 | 4.1 | 8.1 | 126300 | 101290 | 43 | | 78.8 | 585 | 545 | 36130 | 1157 | 251 | 1 | 59186 | 5316 | 38 | 55 |
| POND 1 | 11/18/98 | 7.1 | 8.0 | 8260 | 6712 | 22 | | 60.6 | 266 | 54 | 1865 | 64 | 140 | 1 | 3866 | 630 | 7.5 | 6.9 |
| POND 1 | 2/19/99 | 12.3 | 8.1 | 19330 | 16995 | 48 | | 60.6 | 397 | 95 | 5144 | 211 | 168 | 1 | 7894 | 1340 | 14 | 18 |
| POND 1 | 5/12/99 | 7.0 | 7.9 | 34600 | 34222 | 69 | | 67.6 | 548 | 198 | 10500 | 460 | 159 | 1 | 20254 | 292 | 12 | 88 |
| POND 1 | 8/11/99 | 4.2 | 7.9 | 46400 | 49470 | 56 | | 92.7 | 537 | 329 | 13740 | 409 | 131 | 1 | 32369 | 3406 | 35 | 134 |
| POND 1 | 11/2/99 | 9.9 | 8.1 | 215000 | 147412 | 1703 | | 56.3 | 850 | 3445 | 42350 | 4074 | 587 | 1 | 80035 | 24148 | 121 | 1112 |
| POND 1 | 8/21/00 | 4.7 | 7.4 | 8280 | 6514 | 15 | 5.86 | 86.2 | 184 | 26 | 1493 | 38 | 39 | 1 | 3778 | 410 | 14 | 45 |
| POND 1 | 11/14/00 | 9.4 | 7.7 | 38000 | 38326 | 21 | 9.5 | 59.5 | 314 | 132 | 12056 | 194 | 85 | 1 | 22838 | 2158 | 20 | 117 |
| | | | | | | | | | | | | | | | | | | |
| **Ave** | | 7.2 | 7.8 | 54461 | 45952 | 183 | 8 | 67 | 460 | 489 | 14046 | 729 | 195 | 1 | 27007 | 3881 | 31 | 150 |
| **Max** | | 12.3 | 8.1 | 215000 | 147412 | 1703 | 10 | 93 | 850 | 3445 | 42350 | 4074 | 587 | 1 | 80035 | 24148 | 121 | 1112 |
| **Min** | | 4.1 | 7.4 | 8260 | 6514 | 7 | 6 | 47 | 184 | 26 | 1493 | 38 | 39 | 1 | 3778 | 292 | 8 | 7 |
| | | | | | | | | | | | | | | | | | | |
| POND 5 | 12/22/97 | | 7.2 | 975 | 644 | 2.8 | | 70.7 | 35 | 3.2 | 154 | 7.3 | 61 | 1 | 193 | 137 | 1 | 0.05 |
| POND 5 | 2/19/98 | 7.3 | 7.5 | 1152 | 775 | 1.8 | | 54.1 | 41 | 6.9 | 195 | 6.3 | 92 | 1 | 237 | 144 | 0.91 | 1.2 |
| POND 5 | 5/19/98 | 8.1 | 8.9 | 1351 | 846 | 6 | | 75.6 | 78 | 18 | 176 | 13 | 116 | 25 | 318 | 176 | 0.94 | 0.05 |
| POND 5 | 8/18/98 | 5.3 | 6.7 | 1970 | 1277 | 11 | | 75.4 | 108 | 25 | 275 | 14 | 21 | 1 | 449 | 349 | 3.1 | 0.098 |
| | | | | | | | | | | | | | | | | | | |
| **Ave** | | 6.9 | 7.6 | 1362 | 886 | 5 | | 69 | 66 | 13 | 200 | 10 | 73 | 7 | 299 | 202 | 1 | 0 |
| **Max** | | 8.1 | 8.9 | 1970 | 1277 | 11 | 0 | 76 | 108 | 25 | 275 | 14 | 116 | 25 | 449 | 349 | 3 | 1 |
| **Min** | | 5.3 | 6.7 | 975 | 644 | 2 | 0 | 54 | 35 | 3 | 154 | 6 | 21 | 1 | 193 | 137 | 1 | 0 |
| | | | | | | | | | | | | | | | | | | |
| POND 6 | 12/22/97 | | 7.7 | 5330 | 3912 | 27 | | 61.5 | 175 | 24 | 1139 | 30 | 98 | 1 | 1874 | 497 | 11 | 0.56 |
| POND 6 | 2/19/98 | 5.9 | 7.8 | 3960 | 2914 | 23 | | 61.0 | 103 | 11 | 938 | 17 | 73 | 1 | 1363 | 402 | 5.1 | 1.2 |
| POND 6 | 5/19/98 | 8.3 | 9.1 | 4650 | 3389 | 41 | | 85.3 | 213 | 47 | 925 | 29 | 150 | 35 | 1634 | 512 | 8.2 | 0.05 |
| POND 6 | 8/18/98 | 4.8 | 8.6 | 5390 | 4045 | 17 | | 83.1 | 267 | 56 | 950 | 47 | 189 | 11 | 1846 | 639 | 4.1 | 0.84 |
| POND 6 | 11/12/98 | 6.9 | 8.2 | 4540 | 3397 | 44 | | 60.3 | 198 | 35 | 887 | 33 | 166 | 1 | 1592 | 559 | 3.6 | 1.4 |

# Summary of Hydrometrics On-Site Ponds Surface Water Quality Results
## August 1997Through August 2001
## ASARCO El Paso Smelter, Phase III RI

| Sample ID | Sample Date | DO mg/l | PH | SC umhos/cm | TDS mg/l | TSS mg/l | Turb NTU | Temp oF | Dissolved Ca mg/l | Dissolved Mg mg/l | Dissolved Na mg/l | Dissolved K mg/l | HCO3 mg/l | CO3 mg/l | SO4 mg/l | Cl mg/l | F mg/l | N mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| POND 6 | 2/19/99 | 10.8 | 8.5 | 2610 | 1716 | 15 | | 67.3 | 82 | 7.6 | 507 | 15 | 62 | 5 | 462 | 286 | 1.9 | 0.05 |
| POND 6 | 5/12/99 | 9.2 | 8.9 | 2450 | 1632 | 23 | | 69.4 | 115 | 23 | 420 | 20 | 144 | 1 | 691 | 278 | 2.2 | 0.1 |
| POND 6 | 8/11/99 | 7.0 | 8.8 | 1773 | 1186 | 17 | | 92.7 | 97 | 18 | 218 | 11 | 112 | 19 | 377 | 250 | 1.6 | 0.08 |
| POND 6 | 11/2/99 | 9.5 | 9.2 | 1702 | 1032 | 34 | 13.91 | 59.9 | 95 | 17 | 222 | 11 | 165 | 1 | 338 | 243 | 1.7 | 0.16 |
| POND 6 | 2/7/00 | 6.4 | 7.7 | 1420 | 909 | 15 | 200 | 52.7 | 77 | 13 | 205 | 8.5 | 96 | 1 | 226 | 177 | 1.4 | 0.54 |
| POND 6 | 5/9/00 | 8.8 | 9.3 | 1868 | 1227 | 38 | 200 | 73.9 | 109 | 17 | 307 | 12 | 50 | 41 | 383 | 298 | 2.4 | 0.06 |
| POND 6 | 8/21/00 | 8.3 | 7.6 | 2190 | 1598 | 22 | 9.72 | 90.0 | 188 | 33 | 219 | 13 | 61 | 1 | 745 | 246 | 2.9 | 0.57 |
| POND 6 | 11/14/00 | 12.4 | 8.9 | 3450 | 2715 | 21 | 200 | 61.5 | 273 | 58 | 353 | 19 | 88 | 10 | 1321 | 369 | 4.7 | 0.26 |
| | | | | | | | | | | | | | | | | | | |
| **Ave** | | 8.2 | 8.5 | 3179 | 2282 | 26 | 125 | 71 | 153 | 28 | 561 | 20 | 112 | 10 | 989 | 366 | 4 | 0 |
| **Max** | | 12.4 | 9.3 | 5390 | 4045 | 44 | 200 | 93 | 273 | 58 | 1139 | 47 | 189 | 41 | 1874 | 639 | 11 | 1 |
| **Min** | | 4.8 | 7.6 | 1420 | 909 | 15 | 10 | 53 | 77 | 8 | 205 | 9 | 50 | 1 | 226 | 177 | 1 | 0 |
| | | | | | | | | | | | | | | | | | | |
| SEP-14 | 11/12/98 | | 8.9 | 272 | 182 | 50 | | 55.6 | 24 | 4 | 22 | 5 | 77 | 10 | 65 | 7.6 | 0.32 | 0.1 |
| SEP-14 | 8/11/99 | 6.4 | 7.8 | 160 | 103 | 53 | | 88.5 | 15 | 2.7 | 12 | 5 | 51 | 1 | 20 | 1.1 | 0.28 | 0.09 |
| SEP-14 | 8/21/00 | 5.9 | 7.7 | 183 | 136 | 49 | 5.8 | 87.1 | 12 | 3 | 16 | 2.6 | 54 | 1 | 33 | 6 | 0.24 | 0.41 |
| SEP-14 | 11/14/00 | 10.2 | 7.6 | 152 | 116 | 51 | 6.11 | 55.8 | 15 | 2.9 | 8.9 | 2.5 | 59 | 1 | 20 | 3.7 | 0.16 | 0.55 |
| SEP-14 | 11/14/00 | 10.2 | 7.8 | 151 | 106 | 43 | | 55.8 | 14 | 2.7 | 8.2 | 3 | 93 | 1 | 20 | 4.8 | 0.16 | 0.39 |
| SEP-14 | 6/27/01 | 4.6 | 6.8 | 306 | 262 | 71 | 88.2 | 90.9 | 23 | 4.5 | 26 | 7.7 | 51 | 1 | 75 | 9.2 | 0.35 | 1.1 |
| SEP-14 | 6/27/01 | 4.7 | 6.5 | 308 | 232 | 75 | 89.7 | 91.4 | 24 | 4.8 | 26 | 7.9 | 63 | 1 | 73 | 9.6 | 0.35 | 1.2 |
| | | | | | | | | | | | | | | | | | | |
| **Ave** | | 7.0 | 7.6 | 219 | 162 | 56 | 47 | 75 | 18 | 4 | 17 | 5 | 64 | 2 | 44 | 6 | 0 | 1 |
| **Max** | | 10.2 | 8.9 | 308 | 262 | 75 | 90 | 91 | 24 | 5 | 26 | 8 | 93 | 10 | 75 | 10 | 0 | 1 |
| **Min** | | 4.6 | 6.5 | 151 | 103 | 43 | 6 | 56 | 12 | 3 | 8 | 3 | 51 | 1 | 20 | 1 | 0 | 0 |

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | As TRC mg/l | Cd Dis mg/l | Se Dis mg/l | Se T mg/l | Se TRC mg/l | Zn Dis mg/l | Zn T mg/l | Zn TRC mg/l |
|---|---|---|---|---|---|---|---|---|---|---|---|
| POND 1 | 12/22/97 | 0.14 | | | 16 | 0.74 | | | 137 | | |
| POND 1 | 2/19/98 | 0.59 | | | 15 | 0.91 | | | 116 | | |
| POND 1 | 5/19/98 | 0.064 | | | 22 | 1.7 | | | 82 | | |
| POND 1 | 8/18/98 | 0.22 | | 0.29 | 35 | 2.9 | | 2.8 | 51 | | 51 |
| POND 1 | 11/18/98 | 0.34 | | 0.54 | 1.9 | 0.38 | | 0.37 | 3.6 | | 4.3 |
| POND 1 | 2/19/99 | 0.19 | | 0.44 | 6.2 | 0.97 | | 0.99 | 7 | | 8.6 |
| POND 1 | 5/12/99 | 0.082 | | 0.27 | 19 | 1.4 | | 1.3 | 33 | | 20 |
| POND 1 | 8/11/99 | 0.42 | | 0.45 | 18 | 2.1 | | 2.1 | 9.8 | | 2.1 |
| POND 1 | 11/2/99 | | 2.1 | | | | 11 | | | 58 | |
| POND 1 | 8/21/00 | | 0.27 | | | | 0.39 | | | 2.8 | |
| POND 1 | 11/14/00 | | 0.7 | | | | 1.5 | | | 9.8 | |
| | | | | | | | | | | | |
| POND 5 | 12/22/97 | 0.098 | | | 0.054 | 0.005 U | | | 0.6 | | |
| POND 5 | 2/19/98 | 0.14 | | | 0.04 | 0.026 | | | 0.43 | | |
| POND 5 | 5/19/98 | 0.081 | | | 0.021 | 0.009 | | | 0.22 | | |
| POND 5 | 8/18/98 | 0.21 | | 0.27 | 0.067 | 0.032 | | 0.028 | 0.82 | | 1 |
| POND 6 | 12/22/97 | 3.7 | | | 0.15 | 0.12 | | | 0.92 | | |
| POND 6 | 2/19/98 | 1.8 | | | 0.13 | 0.08 | | | 1.8 | | |
| POND 6 | 5/19/98 | 2.7 | | | 0.059 | 0.082 | | | 0.16 | | |
| POND 6 | 8/18/98 | 0.88 | | 0.87 | 0.12 | 0.058 | | 0.051 | 0.3 | | 0.46 |
| POND 6 | 11/12/98 | 1.5 | | 1.6 | 0.27 | 0.079 | | 0.08 | 0.98 | | 1.9 |
| POND 6 | 2/19/99 | 0.59 | | 0.68 | 0.041 | 0.035 | | 0.035 | 0.19 | | 0.36 |
| POND 6 | 5/12/99 | 0.9 | | 0.83 | 0.064 | 0.034 | | 0.025 | 0.12 | | 0.33 |
| POND 6 | 8/11/99 | 0.4 | | 0.4 | 0.047 | 0.022 | | 0.024 | 0.092 UJ1 | | 0.34 |
| POND 6 | 11/2/99 | | 0.45 | | | | 0.012 | | | 0.44 | |
| POND 6 | 2/7/00 | | 0.27 | | | | 0.014 | | | 0.41 | |
| POND 6 | 5/9/00 | | 0.75 | | | | 0.035 | | | 0.15 J2 | |
| POND 6 | 8/21/00 | | 0.97 | | | | 0.099 | | | 1.9 | |
| POND 6 | 11/14/00 | | 1.3 | | | | 0.1 | | | 1.4 | |
| | | | | | | | | | | | |
| SEP-14 | 11/12/98 | 0.057 | | 0.055 | 0.005 | 0.005 U | | 0.005 U | 0.02 U | | 0.18 |
| SEP-14 | 8/11/99 | 0.045 | | 0.049 | 0.005 | 0.005 U | | 0.005 U | 0.025 UJ1 | | 0.22 |
| SEP-14 | 8/21/00 | | 0.058 | | | | 0.006 | | | 0.14 | |
| SEP-14 | 11/14/00 | | 0.038 | | | | 0.005 U | | | 0.23 | |
| SEP-14 | 11/14/00 | | 0.035 | | | | 0.005 U | | | 0.19 | |
| SEP-14 | 6/27/01 | | 0.094 | | | | 0.005 U | | | 1.3 | |
| SEP-14 | 6/27/01 | | 0.096 | | | | 0.005 U | | | 1.3 | |
| | | | | | | | | | | | |
| Ave | | 0.689 | 0.549 | 0.519 | 6.1 | 0.531 | 1.01 | 0.60 | 20.3 | 6.0 | 7.0 |
| Max | | 3.700 | 2.100 | 1.600 | 35.0 | 2.900 | 11.00 | 2.80 | 137.0 | 58.0 | 51.0 |
| Min | | 0.045 | 0.035 | 0.049 | 0.0 | 0.005 | 0.01 | 0.01 | 0.0 | 0.1 | 0.2 |

**Note:**

J The associated numerical value is an estimated quan
J2 calibration range exceeded or significant deviation fi
J3 Holding time not met. Indicates low bias.
J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected
UJ1 Blank contamination. Indicates possible high bias ar
UJ2 Calibration range exceeded or significant deviation
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusable (
A Anomalous data. No apparent explanation for discre

## Table 2-17

## Drinking Water Standards
## Maximum Contaminant Levels (MCL)

| Parameter | Units | Federal[1] | Texas[2] |
|---|---|---|---|
| Arsenic | mg/1 | 0.05 | 0.05 |
| Cadmium | mg/1 | 0.005 | 0.005 |
| Chromium | mg/1 | 0.1 | 0.1 |
| Copper | mg/1 | 1.3 (action level) | |
| Iron | mg/1 | 0.3 (secondary MCL) | 0.3 (secondary MCL) |
| Lead | mg/1 | 0.015 (action level) | 0.015 (action level) |
| Selenium | mg/1 | 0.05 | 0.05 |
| Zinc | mg/1 | 5 (secondary MCL) | 5.0 (secondary MCL) |
| pH | units | 6.5-8.5 (secondary MCL) | >7.0 (secondary MCL) |
| Specific Conductivity | ---- | ---- | ---- |
| Total Dissolved Solids | mg/1 | 500 (secondary MCL) | 1,000 (secondary MCL) |

Notes:

MCLs are enforceable primary drinking water standards.

Secondary MCLs are nonenforceable federal guidelines.

Action levels are nonenforceable health-based guidance levels.

No standard has been established for specific conductivity.

mg/1= milligrams per liter.

(1) Source: EPA, Drinking Water Regulations and Health Advisories, October 1996.

(2) Source: Texas Natural Resource Conservation Commission, Chapter 290- Water Hygiene, Subchapter F, Drinking Water Standards, Governing Drinking Water Quality and Reporting Requirements for Public Water Supply Systems.

# Table 2-18

## Summary of Soil Sample Results for Investigation Area 1 (Converter Building/Baghouse Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II | BH1-1 | BH1-1A | 8/31/99 | 0.5-1.5 ft. | 30 | 10 U | 62 |
| | | BH1-1B | 8/31/99 | 1.5-2.5 ft. | 200 | 58 | 1600 |
| | | BH1-1B2 | 8/31/99 | 1.5-2.5 ft. | 233 | 37 | 1470 |
| | | BH1-1C | 8/31/99 | 10-12 ft. | 17 | 10 U | 10 U |
| | | BH1-1D | 8/31/99 | 15-17 ft. | 10 | 10 U | 10 U |
| | | BH1-1E | 8/31/99 | 20-22 ft. | 20 | 10 U | 10 U |
| | | BH1-1F | 8/31/99 | 25-27 ft. | 16 | 20 | 10 U |
| | | BH1-1G | 9/1/99 | 30-32 ft. | 48 | 10 U | 11 |
| | | BH1-1H | 9/1/99 | 35-37 ft. | 33 | 10 U | 16 |
| | | BH1-1I | 9/1/99 | 40-42 ft. | 16 | 10 U | 10 U |
| | | BH1-1J | 9/1/99 | 45-47 ft. | 18 | 10 U | 10 U |
| | BH1-2 | BH1-2A | 9/1/99 | 0-1 ft. | 720 | 590 | 710 |
| | | BH1-2B | 9/1/99 | 1-2 ft. | 77 | 160 | 190 |
| | | BH1-2C | 9/1/99 | 2-3 ft. | 16 | 10 U | 100 |
| | | BH1-2D | 9/1/99 | 3-4 ft. | 30 | 10 U | 140 |
| | | BH1-2E | 9/1/99 | 4-5 ft. | 12 | 10 U | 46 |
| | | BH1-2F | 9/2/99 | 10-12 ft. | 10 U | 10 U | 10 U |
| | | BH1-2G | 9/2/99 | 15-17 ft. | 12 | 10 U | 10 U |
| | | BH1-2H | 9/2/99 | 20-22 ft. | 23 | 10 U | 11 |
| | | BH1-2I | 9/2/99 | 25-27 ft. | 12 | 10 U | 10 U |
| | | BH1-2J | 9/2/99 | 30-32 ft. | 48 | 10 U | 10 U |
| | | BH1-2K | 9/2/99 | 35-37 ft. | 24 | 10 U | 11 |
| | | BH1-2K2 | 9/2/99 | DUP | 25 | 10 U | 12 |
| | | BH1-2L | 9/2/99 | 40-42 ft. | 21 | 11 | 10 U |
| | EP-100 | EP-100A | 9/8/99 | 0-1 ft. | 850 | 360 | 850 |
| | | EP-100B | 9/8/99 | 1-2 ft. | 2300 | 310 | 610 |
| | | EP-100C | 9/8/99 | 2-3 ft. | 720 | 210 | 1900 |
| | | EP-100D | 9/8/99 | 3-4 ft. | 280 | 410 | 1900 |
| | | EP-100E | 9/8/99 | 4-5 ft. | 76 | 33 | 680 |
| | | EP-100F | 9/8/99 | 10-12 ft. | 290 | 61 | 440 |
| | | EP-100G | 9/8/99 | 15-17 ft. | 14 | 10 U | 240 |
| | | EP-100H | 9/8/99 | 20-22 ft. | 91 | 24 | 790 |
| | | EP-100H2 | 9/8/99 | 20-22 ft. | 63 | 53 | 660 |
| | | EP-100I | 9/8/99 | 25-27 ft. | 130 | 10 U | 370 |
| | | EP-100J | 9/8/99 | 30-32 ft. | 28 | 10 U | 37 |
| | | EP-100K | 9/8/99 | 35-37 ft. | 100 | 220 | 50 |
| | | EP-100L | 9/8/99 | 40-42 ft. | 100 | 10 U | 10 U |
| | | EP-100L2 | 9/8/99 | 40-42 ft. | 73 | 10 U | 10 U |
| | | EP-100M | 9/8/99 | 45-47 ft. | 110 | 10 U | 10 U |

## Table 2-18

## Summary of Soil Sample Results for Investigation Area 1 (Converter Building/Baghouse Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I | SSIA1-1 | SSIA1-1A | 7/15/97 | 0 ft. | 3200 | 1900 | 11000 |
| | | SSIA1-1B | 7/15/97 | 1.5 ft. | 2300 | 91 | 5000 |
| | | SSIA1-1C | 7/15/97 | 3 ft. | 4700 | 1700 | 12000 |
| | | SSIA1-1D | 7/15/97 | 4 ft. | 2600 | 900 | 20000 |
| | SSIA1-2 | SSIA1-2A | 7/15/97 | 0 ft. | 21000 | 1100 | 15 |
| | | SSIA1-2B | 7/15/97 | 1.5 ft. | 22000 | 1600 | 5400 |
| | | SSIA1-2C | 7/15/97 | 3 ft. | 15000 | 1200 | 8900 |
| | | SSIA1-2D | 7/15/97 | 4 ft. | 22000 | 1300 | 4000 |
| | SSIA1-3 | SSIA1-3A | 7/15/97 | 0 ft. | 2000 | 320 | 4100 |
| | | SSIA1-3B | 7/15/97 | 1.5 ft. | 4900 | 110 | 5800 |
| | | SSIA1-3C | 7/15/97 | 3 ft. | 3400 | 110 | 7300 |
| | | SSIA1-3D | 7/15/97 | 4 ft. | 1900 | 100 | 5800 |
| | SSIA1-4 | SSIA1-4A | 7/15/97 | 0 ft. | 410 | 88 | 690 |
| | | SSIA1-4B | 7/15/97 | 1.5 ft. | 570 | 160 | 6200 |
| | | SSIA1-4C | 7/15/97 | 3 ft. | 370 | 100 | 3600 |
| | | SSIA1-4D | 7/15/97 | 4 ft. | 130 | 41 | 1400 |
| | SSIA1-5 | SSIA1-5A | 7/15/97 | 0 ft. | 1800 | 120 | 1200 |
| | | SSIA1-5B | 7/15/97 | 1.5 ft. | 220 | 20 | 830 |
| | | SSIA1-5C | 7/15/97 | 3 ft. | 90 | 16 | 670 |
| | | SSIA1-5D | 7/15/97 | 4 ft. | 10 | 10 U | 140 |

Notes:
All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg)
Depth in feet below ground surface.

# Table 2-19

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-1 (Converter Building/Baghouse Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| IA1 | | | | | | | |
| EP-100 | 1/26/00 | | 0.02 | | 0.043 | | 0.01 |
| | 4/28/00 | | 0.019 | | 0.031 | | 0.009 |
| | 8/7/00 | | 0.014 | | 0.027 | | 0.005 |
| | 11/7/00 | | 0.015 | | 0.02 | | 0.003 U |
| | 2/20/01 | | 0.016 | | 0.019 | | 0.004 |
| | 5/9/01 | | 0.021 | | 0.032 | | 0.007 |
| | 7/20/01 | 0.023 | 0.023 | 0.015 | 0.015 | 0.003 U | 0.003 |
| EP-25 | 2/8/00 | | 4 | | 0.006 | | 0.12 |
| | 5/8/00 | | 15 | | 0.005 U | | 0.025 |
| | 8/16/00 | | 6.5 | | 0.005 U | | 0.012 |
| | 11/14/00 | | 12 | | 0.005 U | | 0.011 |
| | 2/26/01 | | 4.8 | | 0.005 U | | 0.009 J4 |
| | 5/16/01 | | 8 | | 0.005 U | | 0.011 |
| | 7/30/01 | 2.8 | 7.4 | 0.005 U | 0.005 U | 0.003 U | 0.007 |
| EP-51 | 1/26/00 | | 1.2 | | 0.031 | | 0.051 |
| | 4/28/00 | | 0.56 | | 0.031 | | 0.02 |
| | 8/7/00 | | 0.75 | | 0.029 | | 0.039 |
| | 8/7/00 | | 0.88 | | 0.03 | | 0.047 |
| | 11/7/00 | | 0.48 | | 0.038 | | 0.031 |
| | 11/7/00 | | 0.42 | | 0.038 | | 0.032 |
| | 2/16/01 | | 0.37 | | 0.034 | | 0.015 |
| | 5/10/01 | | 0.34 | | 0.038 | | 0.011 |
| | 7/20/01 | 0.14 | 0.29 | 0.038 | 0.041 | 0.003 U | 0.014 |
| EP-52 | 1/26/00 | | 1.5 | | 0.43 | | 0.51 |
| | 4/28/00 | | 1.5 | | 0.51 | | 0.96 |
| | 8/7/00 | | 1.3 | | 0.43 | | 0.83 |
| | 11/7/00 | | 1.7 | | 0.45 | | 1.5 |
| | 2/20/01 | | 1.5 | | 0.36 | | 1.4 |
| | 5/10/01 | | 1.7 | | 0.45 | | 1.6 |
| | 7/20/01 | 0.22 | 0.81 | 0.4 | 0.4 | 0.05 | 0.68 |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met

J2 calibration range exceeded or significant deviation from known values. Possible bias.

J3 Holding time not met. Indicates low bias.

J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.

UJ1 Blank contamination. Indicates possible high bias and/or false positive.

UJ2 Calibration range exceeded or significant deviation from known value.

UJ3 Holding times not met. Indicates low bias.

UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusuable (compound may or may not be present). Resampling and/ or reanalysis is necessary for verification.

A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals

T Total Metals

# Table 2-20

## Summary of Soil Sample Results for Investigation Area 2 (Boneyard/Slag Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III | BH2-8 | BH2-8A | 3/28/01 | 65-66 ft. | 190 | 10 U | 100 |
| | | BH2-8B | 3/28/01 | 70-71 ft. | 180 | 12 | 120 |
| | | | | | | | |
| | BH2-9 | BH2-9A | 3/28/01 | 62-63 ft. | 930 | 10 U | 150 |
| | | BH2-9B1 | 3/28/01 | 66-67 ft. | 74 | 14 | 58 |
| | | BH2-9B2 | 3/28/01 | 66-67 ft. | 64 | 15 | 48 |
| | | | | | | | |
| | BH2-10 | BH2-10A | 3/29/01 | 47-48 ft. | 66 | 10 U | 48 |
| | | BH2-10B | 3/29/01 | 51-52 ft. | 55 | 10 U | 51 |
| | | | | | | | |
| | BH2-11 | BH2-11A | 3/29/01 | 21-22 ft. | 120 | 45 | 63 |
| | | BH2-11B | 3/29/01 | 26-27 ft. | 87 | 10 U | 43 |
| | | | | | | | |
| | BH2-12 | BH2-12A | 3/30/01 | 18-19 ft. | 65 | 82 | 45 |
| | | BH2-12B | 3/30/01 | 23-24 ft. | 62 | 55 | 78 |
| | | | | | | | |
| | BH2-13 | BH2-13A | 3/30/01 | 15-16 ft. | 46 | 10 U | 120 |
| | | BH2-13B | 3/30/01 | 18-19 ft. | 42 | 10 U | 65 |
| | | BH2-13B2 | 3/30/01 | 18-19 ft. | 29 | 10 U | 32 |
| | | BH2-13C | 3/30/01 | 26-27 ft. | 86 | 10 U | 77 |
| | | | | | | | |
| | EP-125 | EP-125A | 4/24/01 | 0-1 ft. | 180 | 23 | 840 |
| | | EP-125B | 4/24/01 | 1-2 ft. | 78 | 10 U | 520 |
| | | EP-125C | 4/24/01 | 6-7 ft. | 36 | 13 | 200 |
| | | EP-125D | 4/24/01 | 10-11 ft. | 16 | 10 U | 28 |
| | | EP-125E1 | 4/24/01 | 15-16 ft. | 33 | 10 U | 47 |
| | | EP-125E2 | 4/24/01 | 15-16 ft. | 33 | 13 | 32 |
| | | EP-125F | 4/24/01 | 20-21 ft. | 38 | 10 U | 43 |
| | | EP-125G | 4/24/01 | 25-26 ft. | 33 | 11 | 46 |
| | | EP-125H | 4/24/01 | 30-31 ft. | 34 | 10 U | 50 |
| | | EP-125I | 4/24/01 | 35-36 ft. | 26 | 12 | 59 |
| | | EP-125J | 4/24/01 | 40-41 ft. | 21 | 10 U | 60 |
| | | EP-125K | 4/24/01 | 45-46 ft. | 31 | 10 U | 65 |
| | | | | | | | |
| | EP-126 | EP-126A | 4/26/01 | 0.3-1 ft. | 190 | 74 | 2900 |
| | | EP-126B | 4/26/01 | 1-2 ft. | 55 | 64 | 1400 |
| | | EP-126C | 4/26/01 | 2-3 ft. | 120 | 54 | 1900 |
| | | EP-126D | 4/26/01 | 3-4 ft. | 48 | 23 | 1100 |
| | | EP-126E1 | 4/26/01 | 10-11 ft. | 29 | 10 U | 48 |
| | | EP-126E2 | 4/26/01 | 10-11 ft. | 24 | 14 | 46 |
| | | EP-126F | 4/26/01 | 15-16 ft. | 13 | 10 U | 50 |
| | | EP-126G | 4/26/01 | 20-21 ft. | 34 | 10 U | 42 |
| | | EP-126H | 4/26/01 | 25-26 ft. | 30 | 10 U | 38 |
| | | EP-126I | 4/26/01 | 30-31 ft. | 26 | 10 U | 51 |

# Table 2-20

## Summary of Soil Sample Results for Investigation Area 2 (Boneyard/Slag Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II | BH2-1 | BH2-1A | 8/10/99 | 63-65 ft. | 19 | 10 U | 790 |
| | | BH2-1B | 8/10/99 | 68-70 ft. | 12 | 10 U | 10 U |
| | | BH2-1C | 8/10/99 | 73-75 ft. | 64 | 10 U | 10 U |
| | BH2-3 | BH2-3A | 08/13/99 | 40-42 ft. | 27 | 10 U | 10 U |
| | | BH2-3B | 08/13/99 | 45-47 ft. | 10 U | 10 U | 10 U |
| | | BH2-3C | 08/13/99 | 50-52 ft. | 10 U | 10 U | 10 U |
| | | BH2-3D | 08/13/99 | 55-57 ft. | 10 U | 10 U | 10 U |
| | | BH2-3E | 08/13/99 | 60-62 ft. | 21 | 14 | 10 U |
| | | BH2-3E2 | 08/13/99 | 60-62 ft. | 19 | 10 U | 10 U |
| | | BH2-3F | 08/13/99 | 65-67 ft. | 36 | 10 U | 10 U |
| | | BH2-3G | 08/13/99 | 70-72 ft. | 120 | 15 | 10 U |
| | | BH2-3H | 08/13/99 | 75-76 ft. | 100 | 10 U | 14 |
| | BH2-4 | BH2-4A | 08/16/99 | 54-55 ft. | 170 | 120 | 59 |
| | BH2-5 | BH2-5A | 08/16/99 | 16-18 ft. | 10 U | 10 U | 21 |
| | | BH2-5B | 08/16/99 | 20-22 ft. | 10 U | 10 U | 19 |
| | | BH2-5C | 08/16/99 | 24-26 ft. | 10 U | 10 U | 10 U |
| | | BH2-5C2 | 08/16/99 | 24-26 ft. | 10 U | 10 U | 12 |
| | BH2-6 | BH2-6A | 08/16/99 | 9-11 ft. | 1100 | 450 | 56 |
| | | BH2-6B | 08/16/99 | 15-17 ft. | 3700 | 210 | 74 |
| | | BH2-6C | 08/16/99 | 20-22 ft. | 870 | 1600 | 23 |
| | | BH2-6D | 08/16/99 | 24-26 ft. | 400 | 630 | 15 |
| | | BH2-6D2 | 08/16/99 | 24-26 ft. | 410 | 690 | 14 |
| | | BH2-6E | 08/16/99 | 30-32 ft. | 170 | 710 | 10 U |
| | | BH2-6F | 08/17/99 | 35-37 ft. | 85 | 670 | 10 U |
| | | BH2-6G | 08/17/99 | 40-42 ft. | 370 | 1400 | 10 U |
| | | BH2-6H | 08/17/99 | 45-47 ft. | 47 | 58 | 10 U |
| | BH2-7 | BH2-7A | 08/17/99 | 10-12 ft. | 13 | 10 U | 10 U |
| | | BH2-7B | 08/17/99 | 15-17 ft. | 10 U | 10 U | 10 U |
| | | BH2-7C | 08/17/99 | 20-22 ft. | 11 | 10 U | 10 U |
| | | BH2-7C2 | 08/17/99 | 20-22 ft. | 11 | 10 U | 10 U |
| | | BH2-7D | 08/17/99 | 25-27 ft. | 10 U | 10 U | 10 U |
| | | BH2-7E | 08/17/99 | 30-32 ft. | 22 | 10 U | 10 U |
| | | BH2-7F | 08/17/99 | 35-37 ft. | 11 | 10 U | 10 U |
| | | BH2-7G | 08/17/99 | 40-41 ft. | 11 | 14 | 10 U |
| | | BH2-7H | 08/17/99 | 45-46 ft. | 10 U | 10 U | 10 U |
| | EP-99 | EP-99A | 8/12/99 | 57-59 ft. | 10 U | 10 U | 45 |
| | | EP-99B | 8/12/99 | 65-67 ft. | 10 U | 10 U | 10 U |

# Table 2-20

## Summary of Soil Sample Results for Investigation Area 2 (Boneyard/Slag Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I | SSIA2-1 | SSIA2-1A | 7/14/97 | 0 ft. | 400 | 14 | 1500 |
| | | SSIA2-1B | 7/14/97 | 1.5 ft. | 1200 | 56 | 180 |
| | SSIA2-2 | SSIA2-2A | 7/14/97 | 0 ft. | 840 | 150 | 2700 |
| | | SSIA2-2B | 7/14/97 | 3 ft. | 1600 | 450 | 10000 |
| | RIBH-2 | RIBH-2A | 6/30/97 | 7 ft. | 82 | 10 U | 39 |
| | | RIBH-2B | 6/30/97 | 10 ft. | 20 U | 10 U | 29 |
| | | RIBH-2C | 6/30/97 | 15 ft. | 20 U | 10 U | 26 |
| | RIBH-3 | RIBH-3A | 6/30/97 | 28 ft. | 20 U | 10 U | 800 |
| | | RIBH-3A2 | 6/30/97 | 28 ft. | 20 U | 10 U | 800 |
| | | RIBH-3B | 6/30/97 | 35 ft. | 25 | 10 U | 20 |
| | | RIBH-3C | 6/30/97 | 40 ft. | 20 U | 10 U | 44 |
| | RIBH-4 | RIBH-4A | 6/30/97 | 0 ft. | 280 | 24 | 970 |
| | | RIBH-4B | 6/30/97 | 10 ft. | 29 | 10 U | 140 |
| | | RIBH-4C | 6/30/97 | 15 ft. | 20 U | 10 U | 25 |
| | RIBH-5 | RIBH-5A | 6/30/97 | 2 ft. | 20 U | 10 U | 210 |
| | | RIBH-5B | 6/30/97 | 8 ft. | 20 U | 10 U | 17 |
| | | RIBH-5B2 | 6/30/97 | 8 ft. | 20 U | 10 U | 19 |
| | | RIBH-5C | 6/30/97 | 10 ft. | 20 U | 10 U | 30 |
| | | RIBH-5D | 6/30/97 | 12 ft. | 34 | 10 U | 22 |
| | | RIBH-5E | 6/30/97 | 15 ft. | 20 U | 10 U | 33 |
| | RIBH-6 | RIBH-6A | 6/30/97 | 2 ft. | 270 | 10 U | 830 |
| | EP-75 | EP-75A | 6/2/97 | 35 ft. | 220 | 10 U | 490 |
| | | EP-75B | 6/2/97 | 40 ft. | 120 | 10 U | 120 |
| | | EP-75C | 6/2/97 | 45 ft. | 67 | 10 U | 23 |
| | | EP-75D | 6/2/97 | 50 ft. | 45 | 10 U | 29 |
| | | EP-75E | 6/3/97 | 55 ft. | 91 | 10 U | 760 |
| | | EP-75F | 6/3/97 | 60 ft. | 73 | 10 U | 17 |
| | | EP-75G | 6/3/97 | 65 ft. | 36 | 10 U | 12 |
| | EP-76 | EP-76A | 6/3/97 | 0 ft. | 1800 | 420 | 9500 |
| | | EP-76B | 6/3/97 | 1.5 ft. | 420 | 10 U | 3400 |
| | | EP-76B2 | 6/3/97 | 1.5 ft. | 380 | 16 | 3500 |
| | | EP-76C | 6/3/97 | 45 ft. | 78 | 10 U | 28 |
| | | EP-76D | 6/3/97 | 50 ft. | 29 | 10 U | 20 |
| | | EP-76E | 6/3/97 | 55 ft. | 110 | 10 U | 650 |
| | | EP-76F | 6/3/97 | 60 ft. | 20 U | 10 U | 37 |

## Table 2-20

## Summary of Soil Sample Results for Investigation Area 2 (Boneyard/Slag Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | | | | | | | |
| | EP-81 | EP-81A | 6/6/97 | 5 ft. | 150 | 15 | 790 |
| | | EP-81B | 6/6/97 | 10 ft. | 20 U | 10 U | 140 |
| | | EP-81C | 6/6/97 | 15 ft. | 20 U | 10 U | 14 |
| | | EP-81D | 6/6/97 | 20 ft. | 20 U | 10 U | 12 |
| | | EP-81E | 6/6/97 | 25 ft. | 20 U | 10 U | 11 |
| | | | | | | | |
| | EP-85 | EP-85A | 6/12/97 | 5 ft. | 59 | 10 U | 150 |
| | | EP-85B | 6/12/97 | 10 ft. | 27 | 10 U | 15 |
| | | EP-85C | 6/12/97 | 15 ft. | 22 | 10 U | 27 |
| | | EP-85D | 6/12/97 | 20 ft. | 20 U | 10 U | 32 |
| | | | | | | | |

Notes:
All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg)
Depth in feet below ground surface.
BH2-2 was abandoned and not sampled

## Table 2-21

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-2 (Boneyard/Slag Area)
## El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA2** | | | | | | | |
| **EP-125** | 5/7/01 | | 0.013 | | 0.005 U | | 0.003 U |
| | 7/19/01 | 0.026 | 0.04 | 0.005 U | 0.005 U | 0.003 U | 0.11 |
| **EP-126** | 5/8/01 | | 0.021 | | 0.005 U | | 0.009 |
| | 7/19/01 | 0.039 | 0.042 | 0.006 | 0.006 | 0.003 U | 0.004 J4 |
| **EP-21** | 2/1/00 | | 0.064 J4 | | 0.005 U | | 0.007 |
| | 5/8/00 | | 0.062 | | 0.005 U | | 0.013 |
| | 8/16/00 | | 0.068 J4 | | 0.005 U | | 0.004 |
| | 8/16/00 | | 0.054 J4 | | 0.005 U | | 0.005 |
| | 11/14/00 | | 0.036 | | 0.005 U | | 0.005 |
| | 11/14/00 | | 0.038 | | 0.005 U | | 0.004 |
| | 2/26/01 | | 0.067 | | 0.011 | | 0.029 J4 |
| | 2/26/01 | | 0.061 | | 0.009 | | 0.023 J4 |
| | 5/16/01 | | 0.057 | | 0.005 U | | 0.006 |
| | 7/30/01 | 0.01 | 0.039 | 0.005 U | 0.005 U | 0.003 U | 0.006 |
| **EP-22** | 1/26/00 | | 1.2 | | 0.011 | | 0.1 |
| | 4/28/00 | | 1.2 | | 0.009 | | 0.075 |
| | 8/7/00 | | 1.5 | | 0.013 | | 0.006 |
| | 11/3/00 | | 2.6 | | 0.009 | | 0.003 U |
| | 2/14/01 | | 3.4 | | 0.009 | | 0.004 |
| | 5/9/01 | | 3 | | 0.007 | | 0.015 |
| | 7/19/01 | 3.7 | 3.9 | 0.006 | 0.007 | 0.003 U | 0.045 J4 |
| **EP-53** | 8/11/97 | 51 | | 1.3 | | 0.003 U | |
| | 2/4/98 | 63 | | 1.4 | | 0.003 U | |
| | 2/1/00 | | 45 | | 1.2 | | 0.011 |
| | 5/3/00 | | 32 | | 0.38 | | 0.007 |
| | 8/16/00 | | 35 | | 1.3 | | 0.008 |
| | 11/13/00 | | 49 | | 1.4 | | 0.006 |
| | 2/21/01 | | 37 | | 1 | | 0.003 U |
| | 5/10/01 | | 32 | | 0.47 | | 0.019 |
| | 7/30/01 | 30 | 27 | 0.19 | 0.22 | 0.003 U | 0.008 |
| **EP-75** | 1/26/00 | | 14 | | 0.005 U | | 0.023 |
| | 4/28/00 | | 16 | | 0.007 | | 0.006 |
| | 8/7/00 | | 11 | | 0.005 | | 0.006 |
| | 11/7/00 | | 9.4 | | 0.009 | | 0.018 |
| | 2/14/01 | | 13 | | 0.007 | | 0.003 |
| | 5/9/01 | | 14 | | 0.006 | | 0.003 |
| | 7/20/01 | 15 | 15 | 0.006 | 0.006 | 0.003 U | 0.016 |
| **EP-76** | 1/26/00 | | 1.3 | | 0.005 U | | 0.011 |
| | 4/28/00 | | 0.92 | | 0.005 U | | 0.01 |
| | 8/7/00 | | 1.1 | | 0.005 U | | 0.007 |
| | 11/7/00 | | 1.4 | | 0.005 U | | 0.01 |
| | 2/14/01 | | 1.5 | | 0.005 U | | 0.014 |
| | 5/9/01 | | 1.3 | | 0.005 U | | 0.006 |
| | 7/20/01 | 1.1 | 1 | 0.005 U | 0.005 U | 0.003 | 0.007 |

# Table 2-21

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-2 (Boneyard/Slag Area)
## El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **EP-99** | 8/9/00 | | 6.5 | | 0.005 U | | 0.036 |
| | 11/8/00 | | 3.7 | | 0.005 U | | 0.011 |
| | 2/22/01 | | 6.5 | | 0.007 | | 0.3 |
| | 5/9/01 | | | | | | |
| | 7/26/01 | | | | | | |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met
J2 calibration range exceeded or significant deviation from known values. Possible bias.
J3 Holding time not met. Indicates low bias.
J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.
UJ1 Blank contamination. Indicates possible high bias and/or false positive.
UJ2 Calibration range exceeded or significant deviation from known value.
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusuable (compound may or may not be present). Resampling and/ or reanalysis is necessary for verification.
A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals
T Total Metals

# Table 2-22

## Summary of Soil Sample Results for Investigation Area 3
## (Acid Plants 1 and 2 Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | | Cadmium | | Lead | |
|---|---|---|---|---|---|---|---|---|---|---|
| Phase II | BH3-1 | BH3-1A | 08/18/99 | 0-1 ft. | 300 | | 110 | | 990 | |
| | | BH3-1B | 08/18/99 | 1-2 ft. | 10 | U | 10 | U | 57 | |
| | | BH3-1C | 08/18/99 | 2-3 ft. | 18 | | 14 | | 340 | |
| | | BH3-1D | 08/18/99 | 3-4 ft. | 10 | U | 10 | U | 18 | |
| | | BH3-1E | 08/18/99 | 4-5 ft. | 10 | U | 10 | U | 10 | U |
| | | BH3-1E2 | 08/18/99 | 4-5 ft. | 10 | U | 10 | U | 10 | U |
| | | BH3-1F | 08/23/99 | 25-27 ft. | 10 | U | 10 | U | 10 | U |
| | | BH3-1G | 08/23/99 | 30-32 ft. | 24 | | 10 | U | 10 | U |
| | | BH3-1H | 08/23/99 | 35-37 ft. | 22 | | 10 | U | 10 | U |
| | | BH3-1I | 08/23/99 | 40-42 ft. | 28 | | 10 | U | 10 | U |
| | | BH3-1J | 08/23/99 | 45-47 ft. | 19 | | 10 | U | 10 | U |
| | | BH3-1J2 | 08/23/99 | 45-47 ft. | 12 | | 10 | U | 10 | U |
| | | BH3-1K | 08/23/99 | 49-51 ft. | 10 | U | 10 | U | 29 | |
| | | | | | | | | | | |
| | BH3-2 | BH3-2A | 08/23/99 | 0-1 ft. | 890 | | 560 | | 2500 | |
| | | BH3-2B | 08/23/99 | 1-2 ft. | 10 | U | 10 | U | 52 | |
| | | BH3-2B2 | 08/23/99 | 1-2 ft. | 74 | | 37 | | 280 | |
| | | BH3-2C | 08/23/99 | 25-27 ft. | 72 | | 51 | | 34 | |
| | | BH3-2D | 08/23/99 | 30-32 ft. | 10 | U | 14 | | 10 | U |
| | | BH3-2E | 08/23/99 | 35-37 ft. | 10 | U | 10 | U | 16 | |
| | | BH3-2F | 08/23/99 | 40-42 ft. | 16 | | 10 | U | 10 | U |
| | | BH3-2G | 08/23/99 | 45-47 ft. | 10 | U | 10 | U | 10 | U |
| | | | | | | | | | | |
| | BH-3-3 | BH3-3A | 08/24/99 | 40-42 ft. | 10 | U | 10 | U | 18 | |
| | | BH3-3B | 08/24/99 | 45-47 ft. | 18 | | 13 | | 10 | U |
| | | | | | | | | | | |
| | BH3-4 | BH3-4A | 08/24/99 | 0-1 ft. | 64 | | 37 | | 1300 | |
| | | BH3-4B | 08/24/99 | 1-2 ft. | 10 | U | 10 | U | 120 | |
| | | BH3-4C | 08/25/99 | 39-41 ft. | 370 | | 360 | | 72 | |
| | | BH3-4D | 08/25/99 | 45-47 ft. | 20 | | 10 | U | 15 | |
| | | BH3-4E | 08/25/99 | 40-52 ft. | 19 | | 10 | U | 10 | U |
| | | | | | | | | | | |
| | BH3-5 | BH3-5A | 08/25/99 | 3-4.5 ft. | 870 | | 190 | | 3800 | |
| | | BH3-5A2 | 08/25/99 | 3-4.5 ft. | 550 | | 150 | | 2400 | |
| | | BH3-5B | 08/25/99 | 31 ft. | 2100 | | 430 | | 63 | |
| | | BH3-5C | 08/25/99 | 35 ft. | 420 | | 300 | | 14 | |
| | | BH3-5D | 08/25/99 | 40 ft. | 46 | | 10 | U | 14 | |
| | | BH3-5E | 08/25/99 | 45 ft. | 25 | | 10 | U | 10 | U |
| | | BH3-5F | 08/25/99 | 50-52 ft. | 55 | | 10 | U | 16 | |
| | | | | | | | | | | |
| | BH3-6 | BH3-6A | 08/25/99 | 18-20 ft. | 10 | U | 41 | | 23 | |
| | | BH3-6B | 08/25/99 | 25-27 ft. | 10 | U | 28 | | 14 | |
| | | BH3-6C | 08/26/99 | 30-32 ft. | 10 | U | 10 | U | 20 | |
| | | BH3-6D | 08/26/99 | 35-37 ft. | 10 | U | 16 | | 10 | U |

## Table 2-22

## Summary of Soil Sample Results for Investigation Area 3
## (Acid Plants 1 and 2 Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | BH3-6 | BH3-6E | 08/26/99 | 40-42 ft. | 40 | 14 | 22 |
| | | BH3-6F | 08/26/99 | 45-47 ft. | 10 U | 10 U | 27 |
| | | BH3-6G | 08/26/99 | 50-52 ft. | 330 | 26 | 24 |
| | | BH3-6G2 | 08/26/99 | 50-52 ft. | 380 | 26 | 29 |
| | | BH3-6H | 08/26/99 | 55-57 ft. | 1100 | 40 | 48 |
| | | BH3-6I | 08/26/99 | 60-62 ft. | 10 U | 10 U | 24 |
| | | BH3-6J | 08/26/99 | 65-67 ft. | 72 | 10 U | 28 |
| | | | | | | | |
| | BH3-7 | BH3-7A | 08/26/99 | 30-32 ft. | 10 U | 10 U | 10 U |
| | | BH3-7B | 08/26/99 | 35-37 ft. | 10 U | 10 U | 10 U |
| | | BH3-7C | 08/26/99 | 40-42 ft. | 17 | 10 U | 10 U |
| | | BH3-7C2 | 08/26/99 | 40-42 ft. | 10 U | 10 U | 10 U |
| | | BH3-7D | 08/26/99 | 45-47 ft. | 18 | 10 U | 38 |
| | | BH3-7E | 08/26/99 | 50-52 ft. | 15 | 10 U | 46 |
| | | BH3-7F | 08/26/99 | 55-57 ft. | 56 | 10 U | 10 U |
| | | BH3-7G | 08/26/99 | 60-62 ft. | 10 U | 10 U | 41 |
| | | BH3-7H | 08/26/99 | 65-67 ft. | 50 | 10 U | 63 |
| | | BH3-7I | 08/27/99 | 69-70 ft. | 10 U | 10 U | 12 |
| | | | | | | | |
| | BH3-8 | BH3-8A | 08/31/99 | 55-57 ft. | 10 U | 10 U | 15 |
| | | BH3-8B | 08/31/99 | 60-62 ft. | 180 | 42 | 33 |
| | | BH3-8B2 | 08/31/99 | 60-62 ft. | 170 | 62 | 41 |
| | | | | | | | |
| Phase I | SSIA3-1 | SSIA3-1A | 7/14/97 | 0 ft. | 1900 | 510 | 7400 |
| | | SSIA3-1B | 7/14/97 | 1.5 ft. | 650 | 120 | 6900 |
| | | | | | | | |
| | SSIA3-2 | SSIA3-2A | 7/14/97 | 0 ft. | 20 U | 25 | 220 |
| | | SSIA3-2B | 7/14/97 | 1.5 ft. | 35 | 19 | 550 |
| | | SSIA3-2C | 7/14/97 | 3 ft. | 270 | 52 | 1700 |
| | | | | | | | |
| | SSIA3-3 | SSIA3-3A | 7/14/97 | 0 ft. | 480 | 150 | 2000 |
| | | SSIA3-3B | 7/14/97 | 1.5 ft. | 20 U | 10 U | 37 |
| | | SSIA3-3C | 7/14/97 | 3 ft. | 28 | 10 U | 95 |
| | | SSIA3-3D | 7/14/97 | 4 ft. | 20 U | 10 U | 45 |
| | | | | | | | |
| | SSIA3-4 | SSIA3-4A | 7/14/97 | 0 ft. | 7800 | 1600 | 7300 |
| | | SSIA3-4B | 7/14/97 | 1.5 ft. | 3000 | 330 | 5600 |
| | | | | | | | |
| | SSIA3-5 | SSIA3-5A | 7/15/97 | 0 ft. | 1000 | 280 | 5200 |
| | | SSIA3-5A2 | 7/15/97 | 0 ft. | 950 | 250 | 4800 |
| | | SSIA3-5B | 7/15/97 | 1.5 ft. | 560 | 150 | 3300 |
| | | | | | | | |
| | SSIA3-6 | SSIA3-6A | 7/15/97 | 0 ft. | 2900 | 790 | 11000 |
| | | SSIA3-6B | 7/15/97 | 1.5 ft. | 230 | 67 | 1000 |
| | | SSIA3-6C | 7/15/97 | 3 ft. | 1200 | 240 | 4200 |

## Table 2-22

## Summary of Soil Sample Results for Investigation Area 3 (Acid Plants 1 and 2 Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I | SSIA3-6 | SSIA3-6D | 7/15/97 | 4 ft. | 580 | 130 | 2900 |
| | | | | | | | |
| | SSIA3-7 | SSIA3-7A | 7/15/97 | 0 ft. | 820 | 150 | 2200 |
| | | SSIA3-7B | 7/15/97 | 1.5 ft. | 2700 | 440 | 3700 |
| | | SSIA3-7C | 7/15/97 | 3 ft. | 2000 | 270 | 3300 |
| | | SSIA3-7D | 7/15/97 | 4 ft. | 1400 | 180 | 3300 |
| | | | | | | | |
| | SSIA3-8 | SSIA3-8A | 7/15/97 | 0 ft. | 3200 | 1100 | 8100 |
| | | SSIA3-8B | 7/15/97 | 1.5 ft. | 740 | 170 | 1600 |
| | | SSIA3-8C | 7/15/97 | 3 ft. | 64 | 17 | 230 |
| | | SSIA3-8D | 7/15/97 | 4 ft. | 680 | 100 | 1800 |
| | | | | | | | |
| | SSIA3-9 | SSIA3-9A | 7/15/97 | 0 ft. | 1900 | 1400 | 4500 |
| | | SSIA3-9B | 7/15/97 | 1.5 ft. | 570 | 340 | 2700 |
| | | SSIA3-9C | 7/15/97 | 3 ft. | 99 | 49 | 550 |
| | | SSIA3-9D | 7/15/97 | 4 ft. | 20 U | 10 U | 140 |
| | | | | | | | |
| | SSIA3-10 | SSIA3-10A | 7/15/97 | 0 ft. | 2800 | 360 | 19000 |
| | | SSIA3-10A2 | 7/15/97 | 0 ft. | 3300 | 410 | 22000 |
| | | SSIA3-10B | 7/15/97 | 1.5 ft. | 980 | 680 | 25000 |
| | | SSIA3-10C | 7/15/97 | 3 ft. | 1400 | 370 | 14000 |
| | | SSIA3-10D | 7/15/97 | 4 ft. | 3500 | 550 | 20000 |
| | | | | | | | |
| | EP-73 | EP-73A | 6/1/97 | 15 ft. | 20 U | 10 U | 160 |
| | | EP-73B | 6/1/97 | 20 ft. | 20 U | 10 U | 2400 |
| | | EP-73C | 6/1/97 | 32 ft. | 20 U | 10 U | 230 |
| | | EP-73D | 6/1/97 | 40 ft. | 24 | 10 U | 31 |
| | | EP-73E | 6/1/97 | 45 ft. | 20 U | 10 U | 140 |
| | | EP-73F | 6/17/97 | 78 ft. | 20 U | 10 U | 10 U |
| | | | | | | | |

Notes:

All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.

U: Less than listed value (detection limit)

NA: Not applicable

All concentrations in milligrams per kilogram (mg/kg)

Depth in feet below ground surface.

## Table 2-23

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-3 (Acid Plants 1 and 2)
## El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| IA3 | | | | | | | |
| EP-49 | 1/29/00 | | 40 | | 0.28 | | 0.023 |
| | 4/28/00 | | 42 | | 0.053 | | 0.007 |
| | 8/7/00 | | 34 | | 0.088 | | 0.007 |
| | 11/7/00 | | 33 | | 0.038 | | 0.003 U |
| | 2/20/01 | | 26 | | 0.034 | | 0.006 |
| | 2/20/01 | | 26 | | 0.033 | | 0.006 |
| | 5/10/01 | | 17 | | 0.038 | | 0.003 |
| | 7/26/01 | 21 | 11 | 0.035 | 0.15 | 0.003 U | 0.003 U |
| EP-52 | 1/26/00 | | 1.5 | | 0.43 | | 0.51 |
| | 4/28/00 | | 1.5 | | 0.51 | | 0.96 |
| | 8/7/00 | | 1.3 | | 0.43 | | 0.83 |
| | 11/7/00 | | 1.7 | | 0.45 | | 1.5 |
| | 2/20/01 | | 1.5 | | 0.36 | | 1.4 |
| | 5/10/01 | | 1.7 | | 0.45 | | 1.6 |
| | 7/20/01 | 0.22 | 0.81 | 0.4 | 0.4 | 0.05 | 0.68 |
| EP-54 | 1/26/00 | | 57 | | 0.57 | | 0.022 |
| | 4/28/00 | | 42 | | 0.6 | | 0.011 |
| | 8/7/00 | | 34 | | 0.66 | | 0.018 |
| | 11/7/00 | | 37 | | 0.7 | | 0.015 |
| | 2/20/01 | | 25 | | 0.45 | | 0.008 |
| | 5/10/01 | | 37 | | 0.67 | | 0.04 |
| | 7/26/01 | 22 | 26 | 0.34 | 0.45 | 0.003 U | 0.013 |
| EP-55 | 2/7/00 | | 54 | | 0.16 | | 0.031 |
| | 5/4/00 | | 54 | | 1.3 | | 0.6 |
| | 8/16/00 | | 63 | | 0.56 | | 0.14 |
| | 11/14/00 | | 51 | | 0.38 | | 0.08 |
| | 2/22/01 | | 60 | | 0.84 | | 0.29 |
| | 5/11/01 | | 63 | | 2.3 | | 0.44 |
| | 7/26/01 | 43 | 92 | 0.005 U | 8.7 | 0.003 U | 1.1 |
| EP-73 | 1/26/00 | | 0.019 | | 0.005 U | | 0.003 U |
| | 4/28/00 | | 0.1 | | 0.005 | | 0.003 U |
| | 8/7/00 | | 0.027 | | 0.005 U | | 0.003 U |
| | 11/7/00 | | 0.023 | | 0.005 U | | 0.003 U |
| | 2/16/01 | | 0.03 | | 0.005 U | | 0.003 |
| | 5/9/01 | | 0.031 | | 0.005 U | | 0.003 U |
| | 7/20/01 | 0.041 | 0.054 | 0.005 U | 0.005 U | 0.003 U | 0.004 |
| | 7/20/01 | 0.041 | 0.055 | 0.005 U | 0.005 U | 0.003 U | 0.004 |
| EP-114 | 1/31/00 | | 214 | | 2.7 | | 6.6 |
| | 5/4/00 | | 203 | | 2.6 | | 2.1 |
| | 8/14/00 | | 240 | | 1.7 | | 1.1 |
| | 11/10/00 | | 250 | | 2.2 | | 0.53 |
| | 5/4/01 | | 292 | | 3 | | 0.87 |
| | 7/16/01 | 227 | 280 | 0.12 | 2.2 | 0.003 U | 0.41 |

# Table 2-23

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-3 (Acid Plants 1 and 2)
## El Paso Asarco Smelter, Remedial Investigation

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met
J2 calibration range exceeded or significant deviation from known values. Possible bias.
J3 Holding time not met. Indicates low bias.
J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.
UJ1 Blank contamination. Indicates possible high bias and/or false positive.
UJ2 Calibration range exceeded or significant deviation from known value.
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusuable (compound may or may not be present). Resampling and/ or reanalysis is necessary for verification.
A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals
T Total Metals

# Table 2-24

## Summary of Soil Sample Results for Investigation Area 4
## (Front Slope/Western Facility Boundary Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II | BH4-1 | BH4-1A | 11/17/99 | 0-1 ft. | 340 | 110 | 3700 |
| | | BH4-1A2 | 11/17/99 | 0-1 ft. | 240 | 66 | 3500 |
| | | BH4-1B | 11/17/99 | 1-2 ft. | 260 | 77 | 4100 |
| | | BH4-1C | 11/17/99 | 2-3 ft. | 200 | 60 | 2800 |
| | | BH4-1D | 11/17/99 | 3-4 ft. | 170 | 83 | 3300 |
| | | BH4-1E | 11/17/99 | 4-5 ft. | 140 | 54 | 2200 |
| | | BH4-1F | 11/17/99 | 10-12 ft. | 11 | 10 U | 97 |
| | BH4-2 | BH4-2A | 11/18/99 | 0-1 ft. | 760 | 380 | 6500 |
| | | BH4-2B | 11/18/99 | 1-2 ft. | 650 | 320 | 4800 |
| | | BH4-2C | 11/18/99 | 2-3 ft. | 350 | 120 | 2300 |
| | | BH4-2D | 11/18/99 | 3-4 ft. | 200 | 83 | 1400 |
| | | BH4-2E | 11/18/99 | 4-5 ft. | 180 | 72 | 1400 |
| | | BH4-2F | 11/18/99 | 10-12 ft. | 23 | 10 U | 30 |
| | | BH4-2G | 11/18/99 | 15-17 ft. | 13 | 10 U | 36 |
| | BH4-3 | BH4-3A | 11/18/99 | 10-11 ft. | 54 | 10 U | 390 |
| | BH4-4 | BH4-4A | 11/18/99 | 0-1 ft. | 11000 | 2600 | 22000 |
| | | BH4-4A2 | 11/18/99 | 0-1 ft. | 7100 | 1700 | 15000 |
| | | BH4-4B | 11/18/99 | 1-2 ft. | 2000 | 580 | 5300 |
| | | BH4-4C | 11/18/99 | 2-3 ft. | 3200 | 900 | 7600 |
| | | BH4-4D | 11/18/99 | 3-4 ft. | 1900 | 530 | 5300 |
| | | BH4-4E | 11/18/99 | 4-5 ft. | 410 | 82 | 1300 |
| | | BH4-4F | 11/18/99 | 10-12 ft. | 100 | 21 | 270 |
| | BH4-5 | BH4-5A | 11/18/99 | 0-1 ft. | 4200 | 1500 | 8600 |
| | | BH4-5A2 | 11/18/99 | 0-1 ft. | 4100 | 1400 | 8300 |
| | | BH4-5B | 11/18/99 | 1-2 ft. | 2500 | 930 | 5300 |
| | | BH4-5C | 11/18/99 | 2-3 ft. | 2000 | 700 | 4500 |
| | | BH4-5D | 11/18/99 | 3-4 ft. | 910 | 100 | 3600 |
| | | BH4-5E | 11/18/99 | 4-5 ft. | 300 | 84 | 950 |
| | | BH4-5F | 11/18/99 | 10-12 ft. | 130 | 12 | 470 |
| | BH4-6 | BH4-6A | 11/18/99 | 0-1 ft. | 310 | 190 | 1500 |
| | | BH4-6B | 11/18/99 | 1-2 ft. | 50 | 24 | 380 |
| | | BH4-6C | 11/18/99 | 2-3 ft. | 150 | 60 | 890 |
| | | BH4-6D | 11/18/99 | 3-4 ft. | 690 | 190 | 2800 |
| | | BH4-6E | 11/18/99 | 4-5 ft. | 29 | 10 U | 210 |
| | | BH4-6E2 | 11/18/99 | 4-5 ft. | 19 | 18 | 200 |
| | | BH4-6F | 11/18/99 | 10-12 ft. | 43 | 10 U | 140 |
| | EP-114 | EP-114A | 11/15/99 | 2.5-3.5 ft. | 600 | 200 | 840 |
| | | EP-114B | 11/15/99 | 3.5-4.5 ft. | 310 | 460 | 270 |

## Table 2-24

## Summary of Soil Sample Results for Investigation Area 4
## (Front Slope/Western Facility Boundary Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | EP-114 | EP-114C | 11/15/99 | 4.5-5.5 ft. | 18 | 10 U | 64 |
| | | EP-114D | 11/15/99 | 10-12 ft. | 110 | 24 | 210 |
| | EP-115 | EP-115A | 11/16/99 | 0-1 ft. | 2800 | 850 | 7000 |
| | | EP-115B | 11/16/99 | 1-2 ft. | 950 | 400 | 2800 |
| | | EP-115C | 11/16/99 | 2-3 ft. | 830 | 380 | 2300 |
| | | EP-115D | 11/16/99 | 3-4 ft. | 1100 | 420 | 2800 |
| | | EP-115E | 11/16/99 | 4-5 ft. | 750 | 320 | 1700 |
| | | EP-115F | 11/16/99 | 10-12 ft. | 360 | 270 | 510 |
| | | | | | | | |
| | EP-116 | EP-116A | 11/16/99 | 0-1 ft. | 18000 | 530 | 40000 |
| | | EP-116A2 | 11/16/99 | 0-1 ft. | 11000 | 340 | 19000 |
| | | EP-116B | 11/16/99 | 1-2 ft. | 9800 | 360 | 26000 |
| | | EP-116C | 11/16/99 | 2-2.5 ft. | 9200 | 360 | 23000 |
| | | EP-116D | 11/16/99 | 5-7 ft. | 6800 | 960 | 16000 |
| | | EP-116E | 11/16/99 | 10-12 ft. | 5300 | 1200 | 13000 |
| | | | | | | | |
| | EP-117 | EP-117A | 11/16/99 | 0-1 ft. | 2300 | 480 | 3500 |
| | | EP-117B | 11/16/99 | 1-2 ft. | 1700 | 300 | 2300 |
| | | EP-117C | 11/16/99 | 2-3 ft. | 2300 | 460 | 4700 |
| | | EP-117D | 11/16/99 | 3-4 ft. | 1200 | 230 | 2900 |
| | | EP-117E | 11/16/99 | 5-6 ft. | 140 | 10 U | 230 |
| | | EP-117F | 11/16/99 | 10-12 ft. | 210 | 10 U | 110 |
| | | EP-117F2 | 11/16/99 | 10-12 ft. | 500 | 66 | 1100 |
| | | | | | | | |
| | EP-118 | EP-118A | 11/17/99 | 0-1 ft. | 1300 | 340 | 10000 |
| | | EP-118A2 | 11/17/99 | 0-1 ft. | 1000 | 240 | 7400 |
| | | EP-118B | 11/17/99 | 1-2 ft. | 720 | 200 | 5900 |
| | | EP-118C | 11/17/99 | 2-3 ft. | 120 | 56 | 1700 |
| | | EP-118D | 11/17/99 | 3-4 ft. | 61 | 29 | 950 |
| | | EP-118E | 11/17/99 | 4-5 ft. | 75 | 43 | 1300 |
| | | EP-118F | 11/17/99 | 15-15.5 ft. | 54 | 20 | 630 |
| | | | | | | | |
| Phase I | SSIA4-1 | SSIA4-1A | 10/27/97 | 0 ft. | 3100 | 540 | 11000 |
| | | SSIA4-1B | 10/27/97 | 1.5 ft. | 97 | 66 | 200 |
| | | SSIA4-1C | 10/27/97 | 3 ft. | 40 | 42 | 390 |
| | | SSIA4-1D | 10/27/97 | 4 ft. | 20 U | 38 | 120 |
| | | | | | | | |
| | SSIA4-2 | SSIA4-2A | 10/27/97 | 0 ft. | 4900 | 1000 | 11000 |
| | | SSIA4-2A2 | 10/27/97 | 0 ft. | 6200 | 1200 | 11000 |
| | | SSIA4-2B | 10/27/97 | 1.5 ft. | 7000 | 1200 | 12000 |
| | | SSIA4-2C | 10/27/97 | 3 ft. | 100 | 22 | 58 |
| | | SSIA4-2D | 10/27/97 | 4 ft. | 59 | 15 | 27 |
| | | | | | | | |
| | SSIA4-3 | SSIA4-3A | 10/27/97 | 0 ft. | 4100 | 1300 | 9300 |
| | | SSIA4-3B | 10/27/97 | 1.5 ft. | 2900 | 1500 | 8400 |

## Table 2-24

## Summary of Soil Sample Results for Investigation Area 4 (Front Slope/Western Facility Boundary Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | SSIA4-3 | SSIA4-3C | 10/27/97 | 3 ft. | 2000 | 1300 | 2900 |
| | | SSIA4-3D | 10/27/97 | 4 ft. | 1200 | 37 | 1800 |
| | SSIA4-4 | SSIA4-4A | 10/28/97 | 0 ft. | 1200 | 360 | 7500 |
| | | SSIA4-4B | 10/28/97 | 1.5 ft. | 1100 | 280 | 7500 |
| | | SSIA4-4C | 10/28/97 | 3 ft. | 320 | 69 | 2900 |
| | | SSIA4-4D | 10/28/97 | 4 ft. | 600 | 170 | 5800 |
| | SSIA4-5 | SSIA4-5A | 10/28/97 | 0 ft. | 3500 | 840 | 21000 |
| | | SSIA4-5A2 | 10/28/97 | 0 ft. | 3400 | 870 | 23000 |
| | | SSIA4-5B | 10/28/97 | 1.5 ft. | 370 | 54 | 2600 |
| | | SSIA4-5C | 10/28/97 | 3 ft. | 650 | 210 | 7100 |
| | | SSIA4-5D | 10/28/97 | 4 ft. | 45 | 10 U | 430 |
| | SSIA4-6 | SSIA4-6A | 10/28/97 | 0 ft. | 5900 | 1300 | 15000 |
| | | SSIA4-6B | 10/28/97 | 1.5 ft. | 610 | 520 | 4000 |
| | | SSIA4-6C | 10/28/97 | 3 ft. | 37 | 13 | 110 |
| | | SSIA4-6D | 10/28/97 | 4 ft. | 20 U | 10 U | 38 |
| | SSIA4-7 | SSIA4-7A | 10/28/97 | 0 ft. | 17000 | 350 | 49000 |
| | | SSIA4-7A2 | 10/28/97 | 0 ft. | 18000 | 360 | 51000 |
| | | SSIA4-7B | 10/28/97 | 1.5 ft. | 2200 | 310 | 12000 |
| | | SSIA4-7C | 10/28/97 | 3 ft. | 1900 | 100 | 7500 |
| | | SSIA4-7D | 10/28/97 | 4 ft. | 1500 | 430 | 6800 |
| | SSIA4-8 | SSIA4-8A | 10/28/97 | 0 ft. | 3300 | 980 | 25000 |
| | | SSIA4-8B | 10/28/97 | 1.5 ft. | 990 | 190 | 4100 |
| | | SSIA4-8C | 10/28/97 | 3 ft. | 220 | 44 | 960 |
| | | SSIA4-8D | 10/28/97 | 4 ft. | 200 | 30 | 730 |
| | SSIA4-9 | SSIA4-9A | 10/28/97 | 0 ft. | 3000 | 970 | 11000 |
| | | SSIA4-9B | 10/28/97 | 1.5 ft. | 1300 | 600 | 3200 |
| | | SSIA4-9C | 10/28/97 | 3 ft. | 920 | 300 | 1100 |
| | | SSIA4-9D | 10/28/97 | 4 ft. | 330 | 48 | 430 |
| | SSIA4-10 | SSIA4-10A | 10/28/97 | 0 ft. | 840 J4 | 290 | 5100 |
| | | SSIA4-10A2 | 10/28/97 | 0 ft. | 1500 J4 | 380 | 6800 |
| | | SSIA4-10B | 10/28/97 | 1.5 ft. | 880 J4 | 140 | 2800 |
| | | SSIA4-10C | 10/28/97 | 3 ft. | 380 J4 | 68 | 1200 |
| | | SSIA4-10D | 10/28/97 | 4 ft. | 400 J4 | 10 U | 190 |
| | SSIA4-11 | SSIA4-11A | 10/28/97 | 0 ft. | 1800 | 500 | 8900 |
| | | SSIA4-11B | 10/28/97 | 1.5 ft. | 680 | 55 | 1300 |
| | | SSIA4-11C | 10/28/97 | 3 ft. | 95 | 10 U | 130 |
| | | SSIA4-11D | 10/28/97 | 4 ft. | 35 | 10 U | 72 |

## Table 2-24

## Summary of Soil Sample Results for Investigation Area 4 (Front Slope/Western Facility Boundary Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | | | | | | | |
| | SSIA4-12 | SSIA4-12A | 10/28/97 | 0 ft. | 4800 | 930 | 13000 |
| | | SSIA4-12B | 10/28/97 | 1.5 ft. | 20 U | 18 | 10000 |
| | | SSIA4-12C | 10/28/97 | 3 ft. | 20 U | 10 U | 2300 |
| | | SSIA4-12D | 10/28/97 | 4 ft. | 20 U | 10 U | 3200 |
| | SSIA4-13 | SSIA4-13A | 10/28/97 | 0 ft. | 860 | 320 | 11000 |
| | | SSIA4-13B | 10/28/97 | 1.5 ft. | 790 | 320 | 12000 |
| | | SSIA4-13C | 10/28/97 | 3 ft. | 78 | 170 | 1000 |
| | SSIA4-14 | SSIA4-14A | 10/28/97 | 0 ft. | 1600 | 640 | 14000 |
| | | SSIA4-14A2 | 10/28/97 | 0 ft. | 1500 | 670 | 15000 |
| | | SSIA4-14B | 10/28/97 | 1.5 ft. | 490 | 190 | 4500 |
| | | SSIA4-14C | 10/28/97 | 3 ft. | 20 U | 16 | 280 |
| | | SSIA4-14D | 10/28/97 | 4 ft. | 110 | 82 | 1900 |
| | SSIA4-15 | SSIA4-15A | 10/28/97 | 0 ft. | 480 | 300 | 6800 |
| | | SSIA4-15B | 10/28/97 | 1.5 ft. | 440 | 240 | 5300 |
| | | SSIA4-15C | 10/28/97 | 3 ft. | 20 U | 13 | 540 |
| | | SSIA4-15D | 10/28/97 | 4 ft. | 74 | 23 | 930 |
| | SSIA4-16 | SSIA4-16A | 10/28/97 | 0 ft. | 520 | 350 | 5900 |
| | | SSIA4-16B | 10/30/97 | 1.5 ft. | 66 | 30 | 710 |
| | | SSIA4-16C | 10/30/97 | 3 ft. | 20 U | 10 | 210 |
| | | SSIA4-16D | 10/30/97 | 4 ft. | 20 U | 10 U | 18 |
| | SSIA4-17 | SSIA4-17A | 10/30/97 | 0 ft. | 220 | 76 | 2500 |
| | | SSIA4-17A2 | 10/30/97 | 0 ft. | 240 | 75 | 2100 |
| | | SSIA4-17B | 10/30/97 | 1.5 ft. | 160 | 57 | 1900 |
| | | SSIA4-17C | 10/30/97 | 3 ft. | 36 | 12 | 27 |
| | | SSIA4-17D | 10/30/97 | 4 ft. | 97 | 23 | 1000 |
| | SSIA4-18 | SSIA4-18A | 10/30/97 | 0 ft. | 160 | 59 | 1400 |
| | | SSIA4-18B | 10/30/97 | 1.5 ft. | 150 | 85 | 1200 |
| | | SSIA4-18C | 10/30/97 | 3 ft. | 41 | 10 U | 31 |
| | | SSIA4-18D | 10/30/97 | 4 ft. | 38 | 11 | 100 |
| | SSIA4-19 | SSIA4-19A | 10/30/97 | 0 ft. | 52 | 22 | 560 |
| | | SSIA4-19B | 10/30/97 | 1.5 ft. | 24 | 10 | 440 |
| | | SSIA4-19C | 10/30/97 | 3 ft. | 20 U | 10 U | 23 |
| | | SSIA4-19D | 10/30/97 | 4 ft. | 20 U | 10 U | 230 |
| | SSIA4-20 | SSIA4-20A | 10/30/97 | 0 ft. | 75 | 32 | 1300 |
| | | SSIA4-20A2 | 10/30/97 | 0 ft. | 100 | 42 | 1400 |
| | | SSIA4-20B | 10/30/97 | 1.5 ft. | 20 U | 16 | 550 |
| | | SSIA4-20C | 10/30/97 | 3 ft. | 20 U | 10 U | 22 |

## Table 2-24

## Summary of Soil Sample Results for Investigation Area 4
## (Front Slope/Western Facility Boundary Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | SSIA4-20 | SSIA4-20D | 10/30/97 | 4 ft. | 20 U | 10 U | 460 |
| | SSIA4-21 | SSIA4-21A | 10/30/97 | 0 ft. | 160 | 63 | 2500 |
| | | SSIA4-21B | 10/30/97 | 1.5 ft. | 210 | 73 | 3200 |
| | | SSIA4-21C | 10/30/97 | 3 ft. | 48 | 15 | 1100 |
| | | SSIA4-21D | 10/30/97 | 4 ft. | 24 | 11 | 560 |
| | SSIA4-22 | SSIA4-22A | 10/30/97 | 0 ft. | 140 | 62 | 2200 |
| | | SSIA4-22B | 10/30/97 | 1.5 ft. | 45 | 22 | 1200 |
| | | SSIA4-22C | 10/30/97 | 3 ft. | 20 U | 10 U | 21 |
| | | SSIA4-22D | 10/30/97 | 4 ft. | 20 U | 10 U | 210 |
| | SSIA4-23 | SSIA4-23A | 10/30/97 | 0 ft. | 250 | 91 | 4600 |
| | | SSIA4-23A2 | 10/30/97 | 0 ft. | 270 | 97 | 5000 |
| | | SSIA4-23B | 10/30/97 | 1.5 ft. | 20 U | 13 | 370 |
| | | SSIA4-23C | 10/30/97 | 3 ft. | 20 U | 10 U | 75 |
| | | SSIA4-23D | 10/30/97 | 4 ft. | 29 | 15 | 520 |
| | SSIA4-24 | SSIA4-24A | 10/30/97 | 0 ft. | 120 | 38 | 1800 |
| | | SSIA4-24B | 10/30/97 | 1.5 ft. | 20 U | 10 U | 260 |
| | | SSIA4-24C | 10/30/97 | 3 ft. | 22 | 10 U | 190 |
| | | SSIA4-24D | 10/30/97 | 4 ft. | 20 U | 10 U | 75 |
| | SSIA4-25 | SSIA4-25A | 10/30/97 | 0 ft. | 380 | 200 | 9400 |
| | | SSIA4-25B | 10/30/97 | 1.5 ft. | 20 U | 10 U | 370 |
| | | SSIA4-25C | 10/30/97 | 3 ft. | 20 U | 10 U | 200 |
| | | SSIA4-25D | 10/30/97 | 4 ft. | 120 | 13 | 620 |
| | SSIA4-26 | SSIA4-26A | 10/30/97 | 0 ft. | 320 | 82 | 3800 |
| | | SSIA4-26A2 | 10/30/97 | 0 ft. | 300 | 89 | 3600 |
| | | SSIA4-26B | 10/30/97 | 1.5 ft. | 20 U | 10 U | 180 |
| | | SSIA4-26C | 10/30/97 | 3 ft. | 20 U | 10 U | 270 |
| | | SSIA4-26D | 10/30/97 | 4 ft. | 20 U | 11 | 550 |
| | SSIA4-27 | SSIA4-27A | 10/30/97 | 0 ft. | 370 | 140 | 5300 |
| | | SSIA4-27B | 10/30/97 | 1.5 ft. | 25 | 10 U | 82 |
| | SSIA4-28 | SSIA4-28A | 10/30/97 | 0 ft. | 190 | 42 | 1600 |
| | | SSIA4-28B | 10/30/97 | 1.5 ft. | 20 U | 10 U | 63 |
| | SSIA4-29 | SSIA4-29A | 10/30/97 | 0 ft. | 490 | 110 | 3900 |
| | | SSIA4-29A2 | 10/30/97 | 0 ft. | 520 | 100 | 3000 |
| | | SSIA4-29B | 10/30/97 | 1.5 ft. | 20 U | 10 U | 330 |
| | SSIA4-30 | SSIA4-30A | 10/30/97 | 0 ft. | 200 | 16 | 980 |

## Table 2-24

## Summary of Soil Sample Results for Investigation Area 4 (Front Slope/Western Facility Boundary Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | SSIA4-30 | SSIA4-30B | 10/30/97 | 1.5 ft. | 250 | 83 | 2700 |

Notes:
All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg)
Depth in feet below ground surface.

## Table 2-25

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-4 Front Slope/Western Facility Boundary Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA4** | | | | | | | |
| **EP-114** | 1/31/00 | | 214 | | 2.7 | | 6.6 |
| | 5/4/00 | | 203 | | 2.6 | | 2.1 |
| | 8/14/00 | | 240 | | 1.7 | | 1.1 |
| | 11/10/00 | | 250 | | 2.2 | | 0.53 |
| | 5/4/01 | | 292 | | 3 | | 0.87 |
| | 7/16/01 | 227 | 280 | 0.12 | 2.2 | 0.003 U | 0.41 |
| **EP-115** | 1/31/00 | | 0.26 | | 0.19 | | 0.02 |
| | 5/4/00 | | 0.25 | | 0.15 | | 0.084 |
| | 8/14/00 | | 0.25 | | 0.14 | | 0.037 |
| | 11/10/00 | | 0.45 | | 0.17 | | 0.19 |
| | 2/23/01 | | | | | | |
| | 5/4/01 | | | | | | |
| | 7/16/01 | 0.29 | 0.29 | 0.13 | 0.13 | 0.025 | 0.077 |
| **EP-116** | 1/31/00 | | 4.9 | | 1.5 | | 4.1 |
| | 5/4/00 | | 3.3 | | 0.66 | | 1.4 |
| | 8/14/00 | | 3.1 | | 0.4 | | 0.55 |
| | 11/10/00 | | 1.5 | | 0.8 | | 1.1 |
| | 2/22/01 | | 6 | | 1.6 | | 4.2 |
| | 5/4/01 | | 6.2 | | 1.4 | | 3.7 |
| | 7/16/01 | 3.2 | 11 | 0.37 | 3.2 | 0.02 | 9.5 |
| **EP-117** | 1/31/00 | | 11 | | 2.7 | | 10 |
| | 5/4/00 | | 7.2 | | 0.89 | | 3.5 |
| | 8/14/00 | | 5.8 | | 0.54 | | 1.8 |
| | 11/10/00 | | 6.1 | | 0.67 | | 2.4 |
| | 2/22/01 | | 6.4 | | 1.2 | | 4.1 |
| | 5/4/01 | | 11 | | 1.7 | | 4.5 |
| | 7/16/01 | 6.6 | 7.4 | 0.12 | 0.66 | 0.007 | 2 |
| **EP-118** | 1/31/00 | | 0.43 | | 0.071 | | 2.5 |
| | 5/4/00 | | 0.21 | | 0.019 | | 0.66 |
| | 8/14/00 | | 0.22 | | 0.005 U | | 0.12 |
| | 11/10/00 | | 3 | | 0.012 | | 0.36 |
| | 2/22/01 | | 1.4 | | 0.061 | | 1.4 |
| | 5/4/01 | | 0.52 | | 0.014 | | 0.49 |
| | 7/17/01 | 0.18 | 0.45 | 0.005 U | 0.026 | 0.003 U | 1.1 |
| **EP-20** | 1/31/00 | | 0.97 | | 0.076 | | 0.004 |
| | 1/31/00 | | 0.9 | | 0.066 | | 0.007 |
| | 5/4/00 | | 0.76 | | 0.068 | | 0.003 U |
| | 5/4/00 | | 0.78 | | 0.063 | | 0.003 U |
| | 8/2/00 | | 0.76 | | 0.047 | | 0.005 U |
| | 10/30/00 | | 0.86 | | 0.07 | | 0.003 U,UJ4 |
| | 2/22/01 | | 0.98 | | 0.093 | | 0.006 |
| | 5/16/01 | | 0.93 | | 0.087 | | 0.006 |
| | 5/16/01 | | 0.92 | | 0.091 | | 0.004 |
| | 7/17/01 | 0.97 | 0.96 | 0.063 | 0.073 | 0.003 U | 0.011 |

## Table 2-25

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-4 Front Slope/Western Facility Boundary Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **EP-20** | 7/17/01 | 0.96 | 0.96 | 0.063 | 0.073 | 0.003 U | 0.011 |
| **EP-29** | 1/31/00 | | 0.33 | | 0.005 U | | 0.01 |
| | 5/4/00 | | 0.38 | | 0.005 U | | 0.034 |
| | 8/2/00 | | 0.28 | | 0.005 U | | 0.009 |
| | 10/30/00 | | 0.28 | | 0.005 U | | 0.007 J4 |
| | 2/22/01 | | 0.32 | | 0.005 U | | 0.018 |
| | 5/16/01 | | 0.27 | | 0.005 U | | 0.003 U |
| | 7/17/01 | 0.27 | 0.28 | 0.005 U | 0.005 U | 0.003 U | 0.01 |
| **EP-35** | 1/31/00 | | 0.92 | | 0.005 U | | 0.033 |
| | 5/4/00 | | 0.51 | | 0.005 U | | 0.008 |
| | 8/2/00 | | 0.62 | | 0.005 U | | 0.011 |
| | 10/30/00 | | 0.73 | | 0.005 U | | 0.007 J4 |
| | 2/22/01 | | 0.65 | | 0.005 U | | 0.028 |
| | 5/16/01 | | 0.67 | | 0.005 U | | 0.008 |
| | 7/17/01 | 0.59 | 0.68 | 0.005 U | 0.005 U | 0.003 U | 0.013 |
| **EP-71** | 1/24/00 | | 0.11 | | 0.005 U | | 0.008 UJ1 |
| | 4/24/00 | | 0.11 | | 0.005 U | | 0.003 U |
| | 8/3/00 | | 0.11 | | 0.005 U | | 0.005 U |
| | 8/3/00 | | 0.11 | | 0.005 U | | 0.005 U |
| | 11/1/00 | | 0.11 | | 0.005 U | | 0.003 U |
| | 2/9/01 | | 0.093 | | 0.005 U | | 0.003 U |
| | 2/9/01 | | 0.11 | | 0.005 U | | 0.003 U |
| | 5/7/01 | | 0.11 | | 0.005 U | | 0.003 U |
| | 7/18/01 | 0.11 | 0.12 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| | 7/18/01 | 0.12 | 0.12 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met

J2 calibration range exceeded or significant deviation from known values. Possible bias.

J3 Holding time not met. Indicates low bias.

J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.

UJ1 Blank contamination. Indicates possible high bias and/or false positive.

UJ2 Calibration range exceeded or significant deviation from known value.

UJ3 Holding times not met. Indicates low bias.

UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.

A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals

T Total Metals

# Table 2-26

## Summary of Soil Sample Results for Investigation Area 5
## (Historic Smeltertown Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III | EP-119 | EP-119A | 4/2/01 | 0 | 160 | 35 | 800 |
| | | EP-119B | 4/2/01 | 1 | 64 | 20 | 550 |
| | | EP-119C | 4/2/01 | 2 | 91 | 21 | 660 |
| | | EP-119D | 4/2/01 | 3 | 18 | 10 U | 36 |
| | | EP-119E | 4/2/01 | 4 | 31 | 10 U | 97 |
| | | EP-119F | 4/2/01 | 10 | 27 | 10 U | 41 |
| | EP-122 | EP-122A1 | 4/12/01 | 0-1 ft. | 200 | 74 | 1400 |
| | | EP-122A2 | 4/12/01 | 0-1 ft. | 220 | 86 | 1500 |
| | | EP-122B | 4/12/01 | 1-2 ft. | 110 | 53 | 890 |
| | | EP-122C | 4/12/01 | 2-3 ft. | 42 | 11 | 230 |
| | | EP-122D | 4/12/01 | 3-4 ft. | 37 | 10 U | 100 |
| | | EP-122E | 4/12/01 | 4-5 ft. | 29 | 10 U | 42 |
| | EP-127 | EP-127A | 4/27/01 | 0-1 ft. | 46 | 16 | 420 |
| | | EP-127B | 4/27/01 | 1-2 ft. | 83 | 20 | 590 |
| | | EP-127C | 4/27/01 | 2-3 ft. | 38 | 12 | 110 |
| | | EP-127D | 4/27/01 | 3-4 ft. | 46 | 10 U | 45 |
| | | EP-127E1 | 4/27/01 | 4-5 ft. | 29 | 10 U | 79 |
| | | EP-127E2 | 4/27/01 | 4-5 ft. | 60 | 19 | 290 |
| | EP-128 | EP-128A | 4/27/01 | 0-1 ft. | 120 | 23 | 2000 |
| | | EP-128B | 4/27/01 | 1-2 ft. | 28 | 10 | 330 |
| | | EP-128C | 4/27/01 | 2-3 ft. | 68 | 10 U | 210 |
| | | EP-128C | 4/27/01 | 2-3 ft. | 1566 | 1031 | 6225 |
| | | EP-128D | 4/27/01 | 3-4 ft. | 13 | 10 U | 20 |
| | EP-132 | EP-132A1 | 6/4/01 | 0-1 ft. | 110 | 22 | 890 |
| | | EP-132A2 | 6/4/01 | 0-1 ft. | 92 | 24 | 840 |
| | | EP-132B | 6/4/01 | 1-2 ft. | 230 | 48 | 1800 |
| | | EP-132C | 6/4/01 | 2-3 ft. | 51 | 19 | 400 |
| | | EP-132D | 6/4/01 | 3-4 ft. | 18 | 10 U | 38 |
| | | EP-132E | 6/4/01 | 4-5 ft. | 29 | 10 U | 56 |
| | | EP-132F | 6/4/01 | 10-11 ft. | 35 | 13 | 99 |
| | | EP-132G | 6/4/01 | 15-16 ft. | 31 | 11 | 42 |
| Phase II | EP-111 | EP-111A | 10/27/99 | 0 | 33 | 27 | 430 |
| | | EP-111B | 10/27/99 | 1 | 10 U | 10 U | 52 |
| | | EP-111C | 10/27/99 | 2 | 50 | 12 | 600 |
| | | EP-111D | 10/27/99 | 3 | 65 | 10 U | 330 |
| | | EP-111E | 10/27/99 | 4 | 35 | 13 | 240 |

# Table 2-26

## Summary of Soil Sample Results for Investigation Area 5
## (Historic Smeltertown Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | EP-112 | EP-112A | 10/27/99 | 0 | 84 | 32 | 1200 |
| | | EP-112B | 10/27/99 | 1 | 86 | 54 | 1500 |
| | | EP-112C | 10/27/99 | 2 | 10 U | 23 | 430 |
| | | EP-112D | 10/27/99 | 3 | 10 U | 10 U | 22 |
| | | EP-112E | 10/27/99 | 4 | 10 U | 10 U | 27 |
| | EP-113 | EP-113A | 10/28/99 | 0 | 10 U | 10 U | 110 |
| | | EP-113B | 10/28/99 | 1 | 26 | 20 | 630 |
| | | EP-113C | 10/28/99 | 2 | 33 | 10 U | 310 |
| | | EP-113D | 10/28/99 | 3 | 24 | 11 | 160 |
| | | EP-113E | 10/28/99 | 4 | 10 U | 10 U | 16 |
| Phase I | RIBH-7 | RIBH-7A | 7/1/97 | 0 ft. | 53 | 28 | 1000 |
| | | RIBH-7B | 7/1/97 | 5 ft. | 20 U | 10 U | 19 |
| | | RIBH-7C | 7/1/97 | 10 ft. | 20 U | 10 U | 24 |
| | RIBH-8 | RIBH-8A | 7/1/97 | 0 ft. | 120 | 120 | 3300 |
| | | RIBH-8B | 7/1/97 | 5 ft. | 20 U | 10 U | 29 |
| | | RIBH-8C | 7/1/97 | 10 ft. | 20 U | 10 U | 17 |
| | | RIBH-8C2 | 7/1/97 | 10 ft. | 20 U | 10 U | 16 |
| | RIBH-9 | RIBH-9A | 7/1/97 | 0 ft. | 63 | 46 | 1100 |
| | | RIBH-9B | 7/1/97 | 5 ft. | 20 U | 10 U | 11 |
| | | RIBH-9C | 7/1/97 | 10 ft. | 20 U | 10 U | 33 |
| | RIBH-10 | RIBH-10A | 7/1/97 | 0 ft. | 46 | 10 U | 400 |
| | | RIBH-10A2 | 7/1/97 | 0 ft. | 28 | 20 | 340 |
| | | RIBH-10B | 7/1/97 | 5 ft. | 20 U | 10 U | 40 |
| | | RIBH-10C | 7/1/97 | 10 ft. | 20 U | 10 U | 21 |
| | SSIA5-1 | SSIA5-1A | 7/7/97 | 0 ft. | 240 | 130 | 4200 |
| | | SSIA5-1B | 7/8/97 | 1.5 ft. | 28 | 17 | 420 |
| | | SSIA5-1C | 7/8/97 | 3 ft. | 20 U | 10 U | 21 |
| | | SSIA5-1D | 7/8/97 | 4 ft. | 20 U | 10 U | 58 |
| | SSIA5-2 | SSIA5-2A | 7/8/97 | 0 ft. | 71 | 66 | 580 |
| | | SSIA5-2B | 7/8/97 | 1.5 ft. | 22 | 10 U | 44 |
| | | SSIA5-2C | 7/8/97 | 3 ft. | 20 U | 10 U | 95 |
| | | SSIA5-2D | 7/8/97 | 4 ft. | 27 | 10 U | 82 |
| | SSIA5-3 | SSIA5-3A | 7/8/97 | 0 ft. | 130 | 110 | 2700 |
| | | SSIA5-3B | 7/8/97 | 1.5 ft. | 20 U | 16 | 850 |
| | | SSIA5-3C | 7/8/97 | 3 ft. | 20 U | 10 U | 410 |
| | | SSIA5-3D | 7/8/97 | 4 ft. | 60 | 17 | 590 |

# Table 2-26

## Summary of Soil Sample Results for Investigation Area 5
## (Historic Smeltertown Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | SSIA5-4 | SSIA5-4A | 7/8/97 | 0 ft. | 37 | 41 | 1100 |
| | | SSIA5-4B | 7/8/97 | 1.5 ft. | 20 U | 44 | 1800 |
| | | SSIA5-4C | 7/8/97 | 3 ft. | 100 | 46 | 2200 |
| | | SSIA5-4D | 7/8/97 | 4 ft. | 20 U | 10 U | 81 |
| | | SSIA5-5A | 7/8/97 | 0 ft. | 20 U | 36 | 1200 |
| | | SSIA5-5B | 7/8/97 | 1.5 ft. | 20 U | 10 U | 210 |
| | | SSIA5-5C | 7/8/97 | 3 ft. | 20 U | 10 U | 160 |
| | | SSIA5-5D | 7/8/97 | 4 ft. | 20 U | 10 U | 63 |
| | SSIA5-6 | SSIA5-6A | 7/8/97 | 0 ft. | 20 U | 14 | 370 |
| | | SSIA5-6B | 7/8/97 | 1.5 ft. | 20 U | 10 | 370 |
| | | SSIA5-6C | 7/8/97 | 3 ft. | 20 U | 13 | 430 |
| | | SSIA5-6D | 7/8/97 | 4 ft. | 20 U | 15 | 500 |
| | SSIA5-7 | SSIA5-7A | 7/8/97 | 0 ft. | 110 | 56 | 1700 |
| | | SSIA5-7B | 7/8/97 | 1.5 ft. | 20 U | 10 U | 68 J4 |
| | | SSIA5-7B2 | 7/8/97 | 1.5 ft. | 20 U | 10 U | 10 J4 |
| | | SSIA5-7C | 7/8/97 | 3 ft. | 20 U | 10 U | 27 J4 |
| | | SSIA5-7D | 7/8/97 | 4 ft. | 20 U | 10 U | 27 J4 |
| | SSIA5-8 | SSIA5-8A | 7/8/97 | 0 ft. | 31 | 42 | 1200 |
| | | SSIA5-8B | 7/8/97 | 1.5 ft. | 32 | 10 U | 30 |
| | | SSIA5-8C | 7/8/97 | 3 ft. | 20 | 10 U | 32 |
| | | SSIA5-8D | 7/8/97 | 4 ft. | 20 U | 10 U | 25 |
| | SSIA5-9 | SSIA5-9A | 7/8/97 | 0 ft. | 90 | 39 | 800 |
| | | SSIA5-9B | 7/8/97 | 1.5 ft. | 20 U | 10 U | 110 |
| | | SSIA5-9C | 7/8/97 | 3 ft. | 20 U | 10 U | 46 |
| | | SSIA5-9D | 7/8/97 | 4 ft. | 20 U | 10 U | 30 |
| | SSIA5-10 | SSIA5-10A | 7/8/97 | 0 ft. | 130 | 110 | 2800 |
| | | SSIA5-10B | 7/8/97 | 1.5 ft. | 20 U | 10 U | 250 |
| | | SSIA5-10C | 7/8/97 | 3 ft. | 20 U | 10 U | 300 |
| | | SSIA5-10D | 7/8/97 | 4 ft. | 20 U | 10 U | 200 |
| | SSIA5-11 | SSIA5-11A | 7/8/97 | 0 ft. | 20 U | 22 | 740 |
| | | SSIA5-11B | 7/8/97 | 1.5 ft. | 20 U | 23 | 470 |
| | | SSIA5-11C | 7/8/97 | 3 ft. | 20 U | 10 U | 230 |
| | | SSIA5-11D | 7/8/97 | 4 ft. | 20 U | 10 U | 31 |
| | SSIA5-12 | SSIA5-12A | 7/8/97 | 0 ft. | 21 | 19 | 540 |
| | | SSIA5-12B | 7/8/97 | 1.5 ft. | 20 U | 11 | 440 |
| | | SSIA5-12C | 7/8/97 | 3 ft. | 20 U | 10 U | 38 |
| | | SSIA5-12D | 7/8/97 | 4 ft. | 20 U | 10 U | 110 |

## Table 2-26

## Summary of Soil Sample Results for Investigation Area 5
## (Historic Smeltertown Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | | | | | | | |
| | SSIA5-13 | SSIA5-13A | 7/8/97 | 0 ft. | 87 | 36 | 830 |
| | | SSIA5-13B | 7/8/97 | 1.5 ft. | 20 U | 10 U | 110 |
| | | SSIA5-13C | 7/8/97 | 3 ft. | 20 U | 10 U | 160 |
| | | SSIA5-13D | 7/8/97 | 4 ft. | 20 U | 10 U | 35 |
| | SSIA5-14 | SSIA5-14A | 7/8/97 | 0 ft. | 78 | 10 U | 170 |
| | | SSIA5-14B | 7/8/97 | 1.5 ft. | 10 | 10 U | 130 |
| | | SSIA5-14C | 7/8/97 | 3 ft. | 20 U | 10 U | 12 |
| | | SSIA5-14D | 7/8/97 | 4 ft. | 20 U | 10 U | 11 |
| | SSIA5-15 | SSIA5-15A | 7/14/97 | 0 ft. | 86 | 20 | 420 |
| | | SSIA5-15A2 | 7/14/97 | 0 ft. | 70 | 19 | 420 |
| | | SSIA5-15B | 7/14/97 | 1.5 ft. | 20 U | 10 U | 34 |
| | | SSIA5-15B2 | 7/14/97 | 1.5 ft. | 20 U | 10 U | 38 |
| | | SSIA5-15C | 7/14/97 | 3 ft. | 20 U | 10 U | 13 |
| | | SSIA5-15D | 7/14/97 | 4 ft. | 20 U | 10 U | 22 |
| | SSIA5-16 | SSIA5-16A | 7/14/97 | 0 ft. | 27 J4 | 24 | 610 |
| | | SSIA5-16A2 | 7/14/97 | 0 ft. | 68 J4 | 40 | 830 |
| | | SSIA5-16B | 7/14/97 | 1.5 ft. | 20 U | 10 U | 150 |
| | | SSIA5-16B2 | 7/14/97 | 1.5 ft. | 20 U | 10 U | 140 |
| | | SSIA5-16C | 7/14/97 | 3 ft. | 20 U | 10 U | 11 |
| | | SSIA5-16D | 7/14/97 | 4 ft. | 20 U | 10 U | 18 |
| | SSIA5-17 | SSIA5-17A | 7/14/97 | 0 ft. | 83 | 85 | 1100 |
| | | SSIA5-17B | 7/14/97 | 1.5 ft. | 24 | 10 U | 140 |
| | | SSIA5-17C | 7/14/97 | 3 ft. | 24 | 10 U | 63 |
| | | SSIA5-17D | 7/14/97 | 4 ft. | 20 U | 10 U | 24 |
| | SSIA5-18 | SSIA5-18A | 7/14/97 | 0 ft. | 26 | 11 | 200 |
| | | SSIA5-18B | 7/14/97 | 1.5 ft. | 20 U | 10 U | 15 |
| | | SSIA5-18C | 7/14/97 | 3 ft. | 20 U | 10 U | 32 |
| | | SSIA5-18D | 7/14/97 | 4 ft. | 20 U | 10 U | 26 |
| | SSIA5-19 | SSIA5-19A | 7/14/97 | 0 ft. | 160 | 150 | 2400 |
| | | SSIA5-19B | 7/14/97 | 1.5 ft. | 20 U | 29 | 310 |
| | | SSIA5-19C | 7/14/97 | 3 ft. | 20 U | 13 | 860 |
| | | SSIA5-19D | 7/14/97 | 4 ft. | 20 U | 15 | 810 |
| | EP-80 | EP-80A | 6/6/97 | 0 ft. | 26 | 10 U | 95 |
| | | EP-80B | 6/6/97 | 5 ft. | 20 U | 10 U | 46 |
| | | EP-80C | 6/6/97 | 10 ft. | 20 U | 10 U | 32 |
| | | EP-80D | 6/6/97 | 15 ft. | 20 U | 10 U | 10 |
| | | EP-80E | 6/6/97 | 20 ft. | 20 U | 10 U | 23 |

## Table 2-26

## Summary of Soil Sample Results for Investigation Area 5 (Historic Smeltertown Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | EP-80 | EP-80F | 6/6/97 | 25 ft. | 20 U | 10 U | 15 |

Notes:
All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg)
Depth in feet below ground surface.

## Table 2-27

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-5 (Historic Smeltertown Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA5** | | | | | | | |
| **EP-57** | 2/7/00 | | 0.43 | | 0.005 U | | 0.004 |
| | 5/8/00 | | 0.37 | | 0.005 U | | 0.006 |
| | 8/15/00 | | 0.35 J4 | | 0.005 U | | 0.003 U |
| | 11/13/00 | | 0.25 | | 0.005 U | | 0.003 |
| | 2/23/01 | | 0.41 | | 0.005 U | | 0.003 UJ1 |
| | 5/16/01 | | 0.32 | | 0.005 U | | 0.003 U |
| | 7/30/01 | 0.17 | 0.38 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| **EP-58** | 2/7/00 | | 3.4 | | 0.005 U | | 0.016 |
| | 5/8/00 | | 3.6 | | 0.005 U | | 0.013 |
| | 5/8/00 | | 3.7 | | 0.005 U | | 0.01 |
| | 8/15/00 | | 3.1 J4 | | 0.005 U | | 0.006 |
| | 8/15/00 | | 5.8 J4 | | 0.005 U | | 0.005 |
| | 11/13/00 | | 3.4 | | 0.005 U | | 0.003 |
| | 2/23/01 | | 3.2 | | 0.005 U | | 0.003 U |
| | 2/23/01 | | 3.5 | | 0.005 U | | 0.003 U |
| | 5/16/01 | | 3.7 | | 0.005 U | | 0.003 U |
| | 7/30/01 | 3.2 | 3.3 | 0.005 U | 0.005 U | 0.003 U | 0.008 |
| **EP-59** | 1/28/00 | | 2.9 | | 0.005 U | | 0.003 |
| | 5/3/00 | | 2.4 | | 0.005 U | | 0.003 |
| | 8/10/00 | | 2.3 | | 0.005 U | | 0.003 U |
| | 8/10/00 | | 2.4 | | 0.005 U | | 0.003 U |
| | 10/31/00 | | 2.5 | | 0.005 U | | 0.004 |
| | 2/21/01 | | 2.5 | | 0.005 | | 0.003 U |
| | 2/21/01 | | 2.2 | | 0.005 | | 0.003 U |
| | 5/15/01 | | 2.2 | | 0.005 U | | 0.003 U |
| | 7/27/01 | 2.1 | 2 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| **EP-60** | 1/28/00 | | 0.008 | | 0.005 U | | 0.003 U |
| | 5/3/00 | | 0.009 | | 0.005 U | | 0.003 U |
| | 8/10/00 | | 0.012 | | 0.005 U | | 0.006 UJ1 |
| | 10/31/00 | | 0.012 | | 0.005 U | | 0.003 U |
| | 2/21/01 | | 0.021 | | 0.005 U | | 0.003 U |
| | 5/15/01 | | 0.012 | | 0.005 U | | 0.003 U |
| | 7/27/01 | 0.022 | 0.025 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| **EP-61** | 2/7/00 | | 0.026 | | 0.005 U | | 0.003 U |
| | 5/8/00 | | 0.013 | | 0.005 U | | 0.004 |
| | 8/15/00 | | 0.007 J4 | | 0.005 U | | 0.003 U |
| | 11/13/00 | | 0.01 | | 0.005 U | | 0.004 |
| | 11/13/00 | | 0.009 | | 0.005 U | | 0.003 U |
| | 2/23/01 | | 0.011 | | 0.005 U | | 0.003 U |
| | 5/16/01 | | 0.023 | | 0.005 U | | 0.003 U |
| | 7/30/01 | 0.011 | 0.008 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| **EP-62** | 1/28/00 | | 0.82 | | 0.005 U | | 0.003 U |
| | 5/3/00 | | 0.87 | | 0.005 U | | 0.004 |
| | 8/10/00 | | 1.1 | | 0.005 U | | 0.003 U |

## Table 2-27

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-5 (Historic Smeltertown Area)
## El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| EP-62 | 10/31/00 | | 1.4 | | 0.005 U | | 0.003 U |
| | 2/21/01 | | 1.1 | | 0.01 | | 0.003 U |
| | 5/15/01 | | 1.3 | | 0.005 U | | 0.003 U |
| | 7/27/01 | 1.1 | 1.2 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-63 | 1/28/00 | | 0.022 | | 0.005 U | | 0.003 |
| | 5/3/00 | | 0.025 | | 0.005 U | | 0.007 |
| | 5/3/00 | | 0.026 | | 0.005 U | | 0.004 |
| | 8/10/00 | | 0.021 | | 0.005 U | | 0.01 UJ1 |
| | 10/31/00 | | 0.028 | | 0.005 U | | 0.013 |
| | 2/21/01 | | 0.041 | | 0.005 U | | 0.027 |
| | 5/15/01 | | 0.03 | | 0.005 U | | 0.034 |
| | 5/15/01 | | 0.028 | | 0.005 U | | 0.036 |
| | 7/27/01 | 0.041 | 0.047 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-64 | 1/28/00 | | 0.043 | | 0.005 U | | 0.003 |
| | 5/3/00 | | 0.052 | | 0.005 U | | 0.005 |
| | 8/10/00 | | 0.049 | | 0.005 U | | 0.003 U |
| | 10/31/00 | | 0.051 | | 0.005 U | | 0.003 U |
| | 2/21/01 | | 0.096 | | 0.009 | | 0.004 |
| | 5/15/01 | | 0.057 | | 0.005 U | | 0.003 U |
| | 7/27/01 | 0.1 | 0.11 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-65 | 2/7/00 | | 0.02 | | 0.005 U | | 0.003 U |
| | 2/7/00 | | 0.018 | | 0.005 U | | 0.003 U |
| | 5/8/00 | | 0.012 | | 0.005 U | | 0.003 U |
| | 8/15/00 | | 0.006 J4 | | 0.005 U | | 0.003 |
| | 11/13/00 | | 0.005 U | | 0.005 U | | 0.003 U |
| | 2/23/01 | | 0.006 | | 0.005 U | | 0.003 U |
| | 5/16/01 | | 0.059 | | 0.005 U | | 0.003 U |
| | 7/30/01 | 0.006 | 0.005 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| | 7/30/01 | 0.005 | 0.005 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-66 | 1/28/00 | | 10 | | 0.005 U | | 0.005 |
| | 5/3/00 | | 8.8 | | 0.005 U | | 0.003 U |
| | 8/10/00 | | 8.5 | | 0.005 U | | 0.006 UJ1 |
| | 10/31/00 | | 8.1 | | 0.005 U | | 0.005 |
| | 2/21/01 | | 7.5 | | 0.011 | | 0.003 |
| | 5/15/01 | | 8.8 | | 0.005 U | | 0.003 U |
| | 7/27/01 | 8.6 | 8.4 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-80 | 1/28/00 | | 0.016 | | 0.005 U | | 0.004 |
| | 5/2/00 | | 0.017 UJ1 | | 0.005 U | | 0.006 |
| | 8/10/00 | | 0.013 | | 0.005 U | | 0.003 U |
| | 11/9/00 | | 0.02 | | 0.005 U | | 0.003 U |
| | 2/16/01 | | 0.025 | | 0.005 U | | 0.003 U |
| | 5/14/01 | | 0.015 | | 0.005 U | | 0.003 U |
| | 7/25/01 | 0.021 | 0.02 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-119 | 7/27/01 | 2.2 | 2.2 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| | 7/27/01 | 2.2 | 2.3 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |

# Table 2-27

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-5 (Historic Smeltertown Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| EP-122 | 5/14/01 | | 2.1 | | 0.005 U | | 0.003 U |
| | 7/27/01 | 2.2 | 2.3 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-132 | 6/8/01 | 1.5 | 1.5 | 0.005 U | 0.005 U | 0.003 U | 0.022 |
| | 6/8/01 | 1.5 | 1.5 | 0.005 U | 0.005 U | 0.003 U | 0.018 |
| | 7/27/01 | 1.9 | 2 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-111 | 1/29/00 | | 0.91 | | 0.005 U | | 0.003 U |
| | 5/2/00 | | 0.83 | | 0.005 U | | 0.004 |
| | 8/14/00 | | 0.97 | | 0.005 U | | 0.003 U |
| | 11/10/00 | | 1.1 | | 0.005 U | | 0.003 |
| | 11/10/00 | | 1.1 | | 0.005 U | | 0.005 |
| | 2/21/01 | | 0.98 | | 0.005 U | | 0.003 U |
| | 5/15/01 | | 0.95 | | 0.005 U | | 0.003 U |
| | 7/31/01 | 0.98 | 0.93 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-112 | 1/29/00 | | 0.013 | | 0.005 U | | 0.003 U |
| | | | 0.013 UJ1 | | 0.005 U | | 0.003 |
| | | | 0.015 | | 0.005 U | | 0.003 U |
| | | | 0.014 | | 0.005 U | | 0.003 U |
| | | | 0.03 | | 0.005 U | | 0.003 U |
| | | | 0.027 | | 0.005 U | | 0.003 U |
| | | | 0.012 | | 0.005 U | | 0.003 U |
| | | 0.03 | 0.029 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-113 | 1/29/00 | | 0.005 U | | 0.005 U | | 0.003 |
| | 5/2/00 | | 0.006 UJ1 | | 0.005 U | | 0.003 U |
| | 8/14/00 | | 0.005 | | 0.005 U | | 0.003 U |
| | 11/10/00 | | 0.015 | | 0.005 U | | 0.003 U |
| | 2/21/01 | | 0.016 | | 0.005 U | | 0.003 U |
| | 5/15/01 | | 0.007 | | 0.005 U | | 0.003 U |
| | 7/31/01 | 0.013 | 0.013 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-127 | 5/8/01 | | 2.5 | | 0.005 U | | 0.003 U |
| | 7/31/01 | 2.5 | 2.5 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met
J2 calibration range exceeded or significant deviation from known values. Possible bias.
J3 Holding time not met. Indicates low bias.
J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.
UJ1 Blank contamination. Indicates possible high bias and/or false positive.
UJ2 Calibration range exceeded or significant deviation from known value.
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusuable (compound may or may not be present). Resampling and/ or reanalysis is necessary for verification.

A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals

T Total Metals

# Table 2-28

## Summary of Soil Sample Results for Investigation Area 8
## (Bedding and Unloading Buildings Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III | BH8-5 | BH8-5A | 4/11/01 | 0-1 ft. | 6100 | 2200 | 24000 |
| | | BH8-5B | 4/11/01 | 1-2 ft. | 2100 | 910 | 13000 |
| | | BH8-5C | 4/11/01 | 2-3 ft. | 3300 | 880 | 22000 |
| | | BH8-5D | 4/11/01 | 15-16 ft. | 48 | 51 | 150 |
| | | BH8-5E | 4/11/01 | 20-21 ft. | 22 | 17 | 49 |
| | BH8-6 | BH8-6A | 4/11/01 | 1-2 ft. | 32 | 10 U | 330 |
| | | BH8-6A2 | 4/11/01 | 1-2 ft. | 18 | 10 U | 248 |
| | | BH8-6B | 4/11/01 | 2-3 ft. | 3500 | 280 | 43000 |
| | | BH8-6C | 4/11/01 | 3-4 ft. | 1600 | 300 | 22000 |
| | | BH8-6D | 4/11/01 | 4-5 ft. | 190 | 18 | 830 |
| | | BH8-6E | 4/11/01 | 15-16 ft. | 10 U | 10 U | 33 |
| | | BH8-6F1 | 4/11/01 | 20-21 ft. | 19 | 12 | 23 |
| | | BH8-6F2 | 4/11/01 | 20-21 ft. | 10 U | 10 U | 17 |
| | BH8-7 | BH8-7A | 4/11/01 | 0-1 ft. | 4900 | 520 | 24000 |
| | | BH8-7B | 4/11/01 | 1-2 ft. | 380 | 36 | 860 |
| | | BH8-7C | 4/11/01 | 2-3 ft. | 37 | 16 | 160 |
| | | BH8-7D | 4/11/01 | 3-4 ft. | 87 | 25 | 350 |
| | | BH8-7E | 4/11/01 | 4-5 ft. | 290 | 72 | 3200 |
| | | BH8-7F | 4/11/01 | 15-16 ft. | 19 | 14 | 35 |
| | | BH8-7G | 4/11/01 | 20-21 ft. | 28 | 10 U | 51 |
| | BH8-8 | BH8-8A | 4/11/01 | 0-1 ft. | 340 | 93 | 2700 |
| | | BH8-8B | 4/11/01 | 1-2 ft. | 860 | 160 | 9200 |
| | | BH8-8C1 | 4/11/01 | 12-13 ft. | 10 U | 10 U | 74 |
| | | BH8-8C2 | 4/11/01 | 12-13 ft. | 10 U | 10 U | 16 |
| | | BH8-8D | 4/11/01 | 18-19 ft. | 10 U | 10 U | 28 |
| | BH8-9 | BH8-9A | 4/11/01 | 0-0.5 ft. | 4700 | 350 | 38000 |
| | | BH8-9B | 4/11/01 | 7-8 ft. | 130 | 96 | 210 |
| | | BH8-9B | 4/11/01 | 7-8 ft. | 118 | 131 | 184 |
| | | BH8-9C | 4/11/01 | 12-13 ft. | 13 | 10 U | 25 |
| | BH8-10 | BH8-10A2 | 4/11/01 | 10-11 ft. | 45 | 37 | 150 |
| | | BH8-10A1 | 4/11/01 | 10-11 ft. | 41 | 40 | 120 |
| | | BH8-10B | 4/11/01 | 15-16 ft. | 18 | 13 | 23 |
| | BH8-11 | BH8-11A | 4/12/01 | 0-1 ft. | 15000 | 730 | 51000 |
| | | BH8-11B | 4/12/01 | 1-2 ft. | 130 | 570 | 1100 |
| | | BH8-11B | 4/12/01 | 1-2 ft. | 108 | 545 | 1039 |
| | | BH8-11C | 4/12/01 | 2-3 ft. | 230 | 750 | 1500 |
| | | BH8-11D | 4/12/01 | 3-4 ft. | 96 | 27 | 1300 |
| | | BH8-11E | 4/12/01 | 4-5 ft. | 75 | 23 | 430 |
| | | BH8-11F | 4/12/01 | 10-11 ft. | 10 U | 10 U | 10 U |

# Table 2-28

## Summary of Soil Sample Results for Investigation Area 8
## (Bedding and Unloading Buildings Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| Phase III cont. | BH8-12 | BH8-12A | 4/16/01 | 0-1 ft. | 1600 | 1500 | 6300 |
| | | BH8-12B | 4/16/01 | 1-2 ft. | 70 | 1900 | 300 |
| | | BH8-12C | 4/16/01 | 2-3 ft. | 110 | 580 | 760 |
| | | BH8-12D | 4/16/01 | 3-4 ft. | 10 U | 10 U | 130 |
| | | BH8-12E | 4/16/01 | 9-10 ft. | 25 | 13 | 48 |
| | | | | | | | |
| Phase II | BH8-1 | BH8-1A | 10/29/99 | 31-33 ft. | 41 | 12 | 34 |
| | | BH8-1B | 10/29/99 | 35-37 ft. | 19 | 10 U | 28 |
| | | BH8-1C | 10/30/99 | 40-42 ft. | 12 | 10 U | 12 |
| | | BH8-1D | 10/30/99 | 45-47 ft. | 10 U | 10 U | 14 |
| | | BH8-1E | 10/30/99 | 50-52 ft. | 10 U | 10 U | 10 U |
| | | BH8-1F | 10/30/99 | 55-57 ft. | 10 U | 10 U | 10 U |
| | | BH8-1F2 | 10/30/99 | 55-57 ft. | 10 U | 10 U | 10 U |
| | | BH8-1G | 10/30/99 | 60-62 ft. | 10 U | 10 U | 10 U |
| | | BH8-1H | 10/30/99 | 65-67 ft. | 10 U | 10 U | 10 U |
| | | BH8-1I | 10/30/99 | 70-72 ft. | 10 U | 10 U | 10 U |
| | | | | | | | |
| | BH8-2 | BH8-2A | 11/1/99 | 10-12 ft. | 171 | 68 | 54 |
| | | BH8-2B | 11/1/99 | 15-17 ft. | 64 | 610 | 30 |
| | | BH8-2C | 11/1/99 | 20-22 ft. | 20 | 18 | 14 |
| | | BH8-2D | 11/1/99 | 25-27 ft. | 12 | 10 U | 10 U |
| | | BH8-2D2 | 11/1/99 | 25-27 ft. | 10 | 11 | 12 |
| | | BH8-2E | 11/1/99 | 30-32 ft. | 10 U | 10 U | 10 U |
| | | BH8-2F | 11/1/99 | 35-37 ft. | 29 | 10 | 11 |
| | | BH8-2G | 11/1/99 | 40-42 ft. | 10 U | 10 U | 10 U |
| | | BH8-2H | 11/1/99 | 45-47 ft. | 10 U | 10 | 10 U |
| | | BH8-2I | 11/1/99 | 50-52 ft. | 10 U | 10 U | 10 U |
| | | BH8-2I2 | 11/1/99 | 50-52 ft. | 10 U | 10 U | 10 U |
| | | BH8-2J | 11/1/99 | 55-57 ft. | 25 | 10 U | 10 U |
| | | BH8-2K | 11/1/99 | 60-62 ft. | 10 U | 10 U | 10 U |
| | | BH8-2L | 11/1/99 | 65-67 ft. | 12 | 10 U | 10 U |
| | | | | | | | |
| | BH8-3 | BH8-3A | 11/1/99 | 14-16 ft. | 63 | 11 | 143 |
| | | BH8-3B | 11/1/99 | 20-22 ft. | 10 U | 10 U | 10 U |
| | | BH8-3C | 11/1/99 | 25-27 ft. | 10 U | 10 U | 15 |
| | | BH8-3C2 | 11/1/99 | 25-27 ft. | 10 U | 10 U | 12 |
| | | BH8-3D | 11/1/99 | 30-32 ft. | 116 | 10 U | 10 U |
| | | BH8-3E | 11/1/99 | 35-37 ft. | 87 | 10 U | 10 U |
| | | BH8-3F | 11/2/99 | 40-42 ft. | 54 | 10 U | 29 |
| | | BH8-3G | 11/2/99 | 45-47 ft. | 10 U | 10 U | 10 U |
| | | BH8-3H | 11/2/99 | 50-52 ft. | 10 U | 10 U | 10 U |
| | | BH8-3I | 11/2/99 | 55-57 ft. | 21 | 10 U | 10 U |
| | | | | | | | |
| | BH8-4 | BH8-4A | 11/2/99 | 0-1 ft. | 6100 | 2600 | 29000 |

# Table 2-28

## Summary of Soil Sample Results for Investigation Area 8
## (Bedding and Unloading Buildings Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II | BH8-4 cont. | BH8-4B | 11/2/99 | 1-2 ft. | 210 | 110 | 550 |
| | | BH8-4C | 11/2/99 | 2-3 ft. | 130 | 170 | 120 |
| | | BH8-4D | 11/2/99 | 3-4 ft. | 10 U | 150 | 26 |
| | | BH8-4E | 11/2/99 | 4-5 ft. | 10 U | 170 | 15 |
| | | BH8-4F | 11/2/99 | 10-12 ft. | 31 | 48 | 10 |
| | | BH8-4G | 11/2/99 | 15-17 ft. | 10 U | 10 U | 10 U |
| | | BH8-4G2 | 11/2/99 | 15-17 ft. | 13 | 10 U | 14 |
| | | BH8-4H | 11/2/99 | 20-22 ft. | 11 | 10 U | 18 |
| | | BH8-4I | 11/2/99 | 25-27 ft. | 15 | 11 | 11 |
| | | BH8-4J | 11/2/99 | 30-32 ft. | 11 | 10 U | 10 U |
| | | BH8-4K | 11/2/99 | 35-37 ft. | 10 U | 10 U | 10 U |
| | | BH8-4L | 11/2/99 | 40-42 ft. | 10 U | 10 U | 10 U |
| | | BH8-4M | 11/2/99 | 45-47 ft. | 10 U | 10 U | 23 |
| | | BH8-4M2 | 11/2/99 | 45-47 ft. | 10 U | 10 U | 11 |
| | | BH8-4N | 11/2/99 | 50-52 ft. | 10 U | 10 U | 10 U |
| | | BH8-4O | 11/2/99 | 55-57 ft. | 10 U | 10 U | 10 U |
| | | BH8-4P | 11/2/99 | 60-62 ft. | 10 U | 10 U | 10 U |
| | | BH8-4Q | 11/2/99 | 65-67 ft. | 10 U | 10 U | 10 U |
| | | | | | | | |
| | EP-103 | EP-103A | 10/4/99 | 0-1 ft. | 12 | 13 | 93 |
| | | EP-103B | 10/4/99 | 1-2 ft. | 10 U | 19 | 390 |
| | | EP-103C | 10/4/99 | 2-3 ft. | 300 | 160 | 7900 |
| | | EP-103D | 10/4/99 | 3-4 ft. | 1400 | 55 | 11000 |
| | | EP-103E | 10/4/99 | 4-5 ft. | 6600 | 13 | 9700 |
| | | EP-103F | 10/4/99 | 10-12 ft. | 15 | 10 U | 61 |
| | | EP-103F2 | 10/4/99 | 10-12 ft. | 10 U | 10 U | 61 |
| | | EP-103G | 10/4/99 | 15-17 ft. | 21 | 10 U | 26 |
| | | EP-103H | 10/4/99 | 20-22 ft. | 19 | 10 U | 39 |
| | | EP-103I | 10/4/99 | 25-27 ft. | 11 | 10 U | 33 |
| | | EP-103J | 10/4/99 | 30-32 ft. | 10 U | 10 U | 43 |
| | | EP-103K | 10/4/99 | 35-37 ft. | 10 U | 10 U | 46 |
| | | EP-103L | 10/4/99 | 40-42 ft. | 14 | 10 U | 50 |
| | | EP-103M | 10/4/99 | 45-47 ft. | 26 | 10 U | 37 |
| | | EP-103N | 10/4/99 | 50-52 ft. | 10 | 10 U | 32 |
| | | EP-103N2 | 10/4/99 | 50-52 ft. | 20 | 10 U | 42 |
| | | EP-103O | 10/4/99 | 55-57 ft. | 10 U | 10 U | 41 |
| | | EP-103P | 10/4/99 | 60-62 ft. | 10 U | 10 U | 36 |
| | | | | | | | |
| | EP-104 | EP-104A | 10/5/99 | 0-1 ft. | 110 | 36 | 2800 |
| | | EP-104B | 10/5/99 | 1-2 ft. | 10 | 10 U | 190 |
| | | EP-104C | 10/5/99 | 2-3 ft. | 46 | 63 | 1900 |
| | | EP-104D | 10/6/99 | 3-4 ft. | 16 | 12 | 580 |
| | | EP-104E | 10/6/99 | 4-5 ft. | 10 U | 10 U | 220 |
| | | EP-104E2 | 10/6/99 | 4-5 ft. | 10 U | 10 U | 140 |
| | | EP-104F | 10/6/99 | 10-12 ft. | 10 U | 10 U | 60 |

# Table 2-28

## Summary of Soil Sample Results for Investigation Area 8
## (Bedding and Unloading Buildings Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | EP-104 cont. | EP-104G | 10/6/99 | 15-17 ft. | 10 U | 10 U | 55 |
| | | EP-104G2 | 10/6/99 | 15-17 ft. | 11 | 5 U | 7.1 |
| | | EP-104H | 10/6/99 | 20-22 ft. | 16 | 10 U | 50 |
| | | EP-104I | 10/5/99 | 25-27 ft. | 10 U | 10 U | 47 |
| | | EP-104J | 10/5/99 | 30-32 ft. | 20 | 10 U | 27 |
| | | EP-104K | 10/5/99 | 35-37 ft. | 10 U | 10 U | 41 |
| | | EP-104L | 10/5/99 | 40-42 ft. | 20 | 10 U | 24 |
| | | EP-104M | 10/5/99 | 45-47 ft. | 10 U | 10 U | 42 |
| | | EP-104N | 10/6/99 | 50-52 ft. | 16 | 10 U | 44 |
| | | EP-104N2 | 10/6/99 | 50-52 ft. | 13 | 10 U | 41 |
| | | EP-104O | 10/6/99 | 55-57 ft. | 10 U | 10 U | 46 |
| | | EP-104P | 10/6/99 | 60-62 ft. | 10 U | 10 U | 37 |
| | | EP-104P2 | 10/6/99 | 60-62 ft. | 5 | 5 U | 7 |
| | | EP-104Q | 10/6/99 | 65-67 ft. | 10 U | 10 U | 39 |
| | | | | | | | |
| | EP-105 | EP-105A | 10/7/99 | 0-1 ft. | 42 | 10 U | 76 |
| | | EP-105B | 10/7/99 | 1-2 ft. | 1600 | 600 | 13000 |
| | | EP-105C | 10/7/99 | 2-3 ft. | 2400 | 120 | 10000 |
| | | EP-105D | 10/7/99 | 3-4 ft. | 1100 | 39 | 1900 |
| | | EP-105E | 10/7/99 | 4-5 ft. | 410 | 59 | 680 |
| | | EP-105E2 | 10/7/99 | 4-5 ft. | 470 | 40 | 910 |
| | | EP-105F | 10/7/99 | 10-12 ft. | 170 | 17 | 480 |
| | | EP-105G | 10/7/99 | 15-17 ft. | 10 U | 10 U | 130 |
| | | EP-105H | 10/7/99 | 20-22 ft. | 11 | 10 U | 55 |
| | | EP-105I | 10/7/99 | 25-27 ft. | 14 | 10 U | 48 |
| | | EP-105J | 10/7/99 | 30-32 ft. | 10 U | 10 U | 47 |
| | | EP-105K | 10/7/99 | 35-37 ft. | 13 | 10 U | 51 |
| | | EP-105L | 10/7/99 | 40-42 ft. | 17 | 10 U | 39 |
| | | EP-105M | 10/7/99 | 45-47 ft. | 10 U | 10 U | 42 |
| | | EP-105N | 10/8/99 | 50-52 ft. | 21 | 10 U | 40 |
| | | EP-105N2 | 10/8/99 | 50-52 ft. | 17 | 10 U | 33 |
| | | EP-105O | 10/8/99 | 55-57 ft. | 10 U | 10 U | 47 |
| | | EP-105P | 10/8/99 | 60-62 ft. | 10 U | 10 U | 40 |
| | | EP-105Q | 10/8/99 | 75-77 ft. | 10 U | 10 U | 46 |
| | | | | | | | |
| | EP-106 | EP-106A | 10/16/99 | 0-1 ft. | 270 | 82 | 2800 |
| | | EP-106B | 10/16/99 | 1-2 ft. | 75 | 26 | 720 |
| | | EP-106C | 10/16/99 | 2-3 ft. | 54 | 10 U | 470 |
| | | EP-106D | 10/16/99 | 3-4 ft. | 92 | 28 | 590 |
| | | EP-106E | 10/16/99 | 4-5 ft. | 380 | 130 | 490 |
| | | EP-106F | 10/16/99 | 10-12 ft. | 23 | 10 U | 57 |
| | | EP-106F2 | 10/16/99 | 10-12 ft. | 13 | 10 U | 48 |
| | | EP-106G | 10/16/99 | 15-17 ft. | 21 | 10 U | 34 |
| | | EP-106H | 10/16/99 | 20-22 ft. | 10 U | 10 U | 43 |
| | | EP-106I | 10/16/99 | 25-27 ft. | 10 U | 10 U | 48 |

# Table 2-28

## Summary of Soil Sample Results for Investigation Area 8
## (Bedding and Unloading Buildings Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | EP-106 cont. | EP-106J | 10/16/99 | 30-32 ft. | 24 | 10 U | 27 |
| | | EP-106K | 10/16/99 | 35-37 ft. | 17 | 10 U | 38 |
| | | EP-106L | 10/16/99 | 40-42 ft. | 22 | 10 U | 27 |
| | | EP-106M | 10/16/99 | 45-47 ft. | 25 | 10 U | 25 |
| | | EP-106N | 10/16/99 | 50-52 ft. | 10 U | 10 U | 32 |
| | | EP-106O | 10/16/99 | 55-57 ft. | 10 U | 11 | 25 |
| | | EP-106O2 | 10/16/99 | 55-57 ft. | 10 U | 12 | 24 |
| | | | | | | | |
| | EP-107 | EP-107A | 10/11/99 | 0-1 ft. | 69 | 15 | 150 |
| | | EP-107B | 10/11/99 | 1-2 ft. | 22 | 10 U | 43 |
| | | EP-107C | 10/11/99 | 2-3 ft. | 10 U | 10 U | 51 |
| | | EP-107D | 10/11/99 | 3-4 ft. | 10 U | 12 | 80 |
| | | EP-107E | 10/11/99 | 4-5 ft. | 31 | 29 | 500 |
| | | EP-107F | 10/11/99 | 15-17 ft. | 77 | 13 | 67 |
| | | EP-107F2 | 10/11/99 | 15-17 ft. | 63 | 12 | 85 |
| | | EP-107G | 10/11/99 | 20-22 ft. | 10 U | 10 U | 54 |
| | | EP-107H | 10/11/99 | 25-27 ft. | 10 U | 10 U | 71 |
| | | EP-107I | 10/11/99 | 30-32 ft. | 10 U | 10 U | 68 |
| | | EP-107J | 10/11/99 | 35-37 ft. | 11 | 10 U | 49 |
| | | EP-107K | 10/11/99 | 40-42 ft. | 14 | 10 U | 32 |
| | | EP-107K2 | 10/11/99 | 40-42 ft. | 17 | 14 | 37 |
| | | EP-107L | 10/11/99 | 45-47 ft. | 10 U | 11 | 44 |
| | | EP-107M | 10/11/99 | 50-52 ft. | 10 U | 10 U | 41 |
| | | EP-107N | 10/12/99 | 55-57 ft. | 10 U | 10 U | 44 |
| | | EP-107O | 10/12/99 | 60-62 ft. | 10 U | 10 U | 26 |
| | | EP-107P | 10/12/99 | 65-67 ft. | 10 U | 11 | 40 |
| | | | | | | | |
| Phase I | SSIA8-1 | SSIA8-1A | 7/16/97 | 0 ft. | 240 | 33 | 44 |
| | | SSIA8-1B | 7/16/97 | 1.5 ft. | 2100 | 400 | 1500 |
| | | SSIA8-1C | 7/16/97 | 3 ft. | 800 | 99 | 10000 |
| | | | | | | | |
| | SSIA8-2 | SSIA8-2A | 7/16/97 | 0 ft. | 20 U | 35 | 240 |
| | | SSIA8-2B | 7/16/97 | 1.5 ft. | 20 U | 11 | 500 |
| | | SSIA8-2C | 7/16/97 | 3 ft. | 880 | 38 | 8900 |
| | | SSIA8-2D | 7/16/97 | 4 ft. | 770 | 37 | 10000 |
| | | | | | | | |
| | SSIA8-3 | SSIA8-3A | 7/16/97 | 0 ft. | 2700 | 660 | 420 |
| | | SSIA8-3B | 7/16/97 | 1.5 ft. | 170 | 150 | 1000 |
| | | SSIA8-3C | 7/16/97 | 3 ft. | 1100 | 400 | 6800 |
| | | SSIA8-3D | 7/16/97 | 4 ft. | 290 | 79 | 4700 |
| | | | | | | | |
| | SSIA8-4 | SSIA8-4A | 7/16/97 | 0 ft. | 20 U | 10 U | 120 |
| | | SSIA8-4B | 7/16/97 | 1.5 ft. | 3700 | 980 | 43000 |
| | | SSIA8-4C | 7/14/97 | 3 ft. | 6600 | 1000 | 71000 |
| | | SSIA8-4D | 7/14/97 | 4 ft. | 3100 | 530 | 22000 |

# Table 2-28

## Summary of Soil Sample Results for Investigation Area 8 (Bedding and Unloading Buildings Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | | | | | | | |
| | SSIA8-5 | SSIA8-5A | 7/16/97 | 0 ft. | 53 | 130 | 180 |
| | | SSIA8-5B | 7/16/97 | 1.5 ft. | 20 U | 10 U | 130 |
| | | SSIA8-5C | 7/16/97 | 3 ft. | 20 U | 28 | 440 |
| | | SSIA8-5D | 7/16/97 | 4 ft. | 20 U | 10 U | 50 |
| | SSIA8-6 | SSIA8-6A | 7/16/97 | 0 ft. | 20 U | 23 | 690 |
| | | SSIA8-6A2 | 7/16/97 | 0 ft. | 20 U | 13 | 680 |
| | | SSIA8-6B | 7/16/97 | 1.5 ft. | 20 U | 47 | 1000 |
| | | SSIA8-6C | 7/16/97 | 3 ft. | 58 | 130 | 1700 |
| | | SSIA8-6D | 7/16/97 | 4 ft. | 120 | 110 | 2400 |
| | SSIA8-7 | SSIA8-7A | 7/16/97 | 0 ft. | 51 | 96 | 520 |
| | | SSIA8-7B | 7/16/97 | 1.5 ft. | 20 U | 22 | 300 |
| | | SSIA8-7C | 7/16/97 | 3 ft. | 31 | 41 | 500 |
| | | SSIA8-7D | 7/16/97 | 4 ft. | 20 U | 10 U | 42 |
| | SSIA8-8 | SSIA8-8A | 7/16/97 | 0 ft. | 20 U | 96 | 770 |
| | | SSIA8-8B | 7/16/97 | 1.5 ft. | 39 | 31 | 1400 |
| | | SSIA8-8C | 7/16/97 | 3 ft. | 20 U | 10 U | 330 |
| | | SSIA8-8D | 7/16/97 | 4 ft. | 20 U | 10 U | 920 |
| | SSIA8-9 | SSIA8-9A | 7/16/97 | 0 ft. | 1000 | 310 | 8900 |
| | | SSIA8-9B | 7/16/97 | 1.5 ft. | 530 | 270 | 11000 |
| | | SSIA8-9C | 7/16/97 | 3 ft. | 180 | 76 | 4600 |
| | | SSIA8-9D | 7/16/97 | 4 ft. | 20 U | 19 | 1300 |
| | SSIA8-10 | SSIA8-10A | 7/17/97 | 0 ft. | 20 U | 13 | 68 |
| | | SSIA8-10B | 7/17/97 | 1.5 ft. | 53 | 66 | 1400 |
| | | SSIA8-10C | 7/17/97 | 3 ft. | 20 U | 25 | 810 |
| | | SSIA8-10D | 7/17/97 | 4 ft. | 20 U | 28 | 660 |
| | SSIA8-11 | SSIA8-11A | 7/17/97 | 0 ft. | 910 | 430 | 3200 |
| | | SSIA8-11B | 7/17/97 | 1.5 ft. | 62 | 86 | 3700 |
| | | SSIA8-11C | 7/17/97 | 3 ft. | 20 U | 10 U | 36 |
| | | SSIA8-11D | 7/17/97 | 4 ft. | 20 U | 10 U | 230 |
| | SSIA8-12 | SSIA8-12A | 7/17/97 | 0 ft. | 150 | 78 | 3600 |
| | | SSIA8-12B | 7/17/97 | 1.5 ft. | 480 | 78 | 4900 |
| | | SSIA8-12C | 7/17/97 | 3 ft. | 32 | 23 | 1100 |
| | | SSIA8-12D | 7/17/97 | 4 ft. | 20 U | 10 U | 38 |
| | SSIA8-13 | SSIA8-13A | 7/17/97 | 0 ft. | 33 | 10 U | 230 |
| | | SSIA8-13B | 7/17/97 | 1.5 ft. | 20 U | 49 | 3100 |
| | | SSIA8-13C | 7/17/97 | 3 ft. | 20 U | 10 U | 190 |

# Table 2-28

## Summary of Soil Sample Results for Investigation Area 8
## (Bedding and Unloading Buildings Area)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | SSIA8-13 | SSIA8-13D | 7/17/97 | 4 ft. | 20 U | 45 | 98 |
| | | | | | | | |
| | SSIA8-14 | SSIA8-14A | 7/17/97 | 0 ft. | 20 U | 10 U | 83 |
| | | SSIA8-14A2 | 7/17/97 | 0 ft. | 20 U | 10 U | 73 |
| | | SSIA8-14B | 7/17/97 | 1.5 ft. | 110 | 25 | 1200 |
| | | SSIA8-14C | 7/17/97 | 3 ft. | 120 | 20 | 2900 |
| | | | | | | | |
| | SSIA8-15 | SSIA8-15A | 7/18/97 | 0 ft. | 20 U | 11 | 160 |
| | | SSIA8-15B | 7/18/97 | 1.5 ft. | 20 U | 14 | 900 |
| | | SSIA8-15C | 7/18/97 | 3 ft. | 20 U | 10 U | 100 |
| | | SSIA8-15D | 7/18/97 | 4 ft. | 83 | 92 | 8900 |
| | | | | | | | |
| | SSIA8-16 | SSIA8-16A | 7/18/97 | 0 ft. | 930 | 240 | 4000 |
| | | SSIA8-16B | 7/18/97 | 1.5 ft. | 370 | 190 | 10000 |
| | | SSIA8-16C | 7/18/97 | 3 ft. | 1100 | 120 | 3500 |
| | | SSIA8-16D | 7/18/97 | 4 ft. | 1200 | 520 | 5000 |
| | | | | | | | |
| | SSIA8-17 | SSIA8-17A | 7/18/97 | 0 ft. | 98 | 29 | 470 |
| | | SSIA8-17B | 7/18/97 | 1.5 ft. | 20 U | 10 U | 380 |
| | | SSIA8-17C | 7/18/97 | 3 ft. | 27 | 10 U | 520 |
| | | SSIA8-17D | 7/18/97 | 4 ft. | 20 U | 11 | 240 |
| | | | | | | | |
| | SSIA8-18 | SSIA8-18A | 7/18/97 | 0 ft. | 260 | 100 | 300 |
| | | SSIA8-18A2 | 7/18/97 | 0 ft. | 280 | 100 | 240 |
| | | SSIA8-18B | 7/18/97 | 1.5 ft. | 20 U | 99 | 3600 |
| | | | | | | | |
| | SSIA8-19 | SSIA8-19A | 7/18/97 | 0 ft. | 44 | 10 U | 350 |
| | | SSIA8-19B | 7/18/97 | 1.5 ft. | 20 U | 10 U | 560 |
| | | SSIA8-19C | 7/18/97 | 3 ft. | 20 U | 10 U | 290 |
| | | SSIA8-19D | 7/18/97 | 4 ft. | 20 U | 220 | 14000 |
| | | | | | | | |
| | SSIA8-20 | SSIA8-20A | 7/18/97 | 0 ft. | 20 U | 10 U | 95 |
| | | SSIA8-20B | 7/18/97 | 1.5 ft. | 330 | 89 | 3900 |
| | | | | | | | |
| | SSIA8-21 | SSIA8-21A | 7/18/97 | 0 ft. | 460 | 300 | 1400 |
| | | SSIA8-21B | 7/18/97 | 1.5 ft. | 780 | 110 | 2900 |
| | | SSIA8-21C | 7/18/97 | 3 ft. | 23 | 10 U | 150 |
| | | SSIA8-21D | 7/18/97 | 4 ft. | 20 U | 14 | 480 |
| | | | | | | | |
| | SSIA8-22 | SSIA8-22A | 7/18/97 | 0 ft. | 6600 | 1400 | 8100 |
| | | SSIA8-22B | 7/18/97 | 1.5 ft. | 2600 | 600 | 1500 |
| | | SSIA8-22C | 7/18/97 | 3 ft. | 1800 | 260 | 350 |
| | | SSIA8-22D | 7/18/97 | 4 ft. | 160 | 42 | 13 |
| | | | | | | | |
| | SSIA8-23 | SSIA8-23A | 7/18/97 | 0 ft. | 140 | 29 | 590 |

## Table 2-28

## Summary of Soil Sample Results for Investigation Area 8 (Bedding and Unloading Buildings Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| PhaseI cont. | SSIA8-23 | SSIA8-23B | 7/18/97 | 1.5 ft. | 20 U | 21 | 490 |
| | | SSIA8-23C | 7/18/97 | 3 ft. | 29 | 10 U | 370 |
| | | SSIA8-23D | 7/18/97 | 4 ft. | 20 U | 10 U | 50 |
| | SSIA8-24 | SSIA8-24A | 7/18/97 | 0 ft. | 110 | 21 | 550 |
| | | SSIA8-24B | 7/18/97 | 1.5 ft. | 44 | 190 | 850 |
| | SSIA8-25 | SSIA8-25A | 7/18/97 | 0 ft. | 4400 | 910 | 20000 |
| | | SSIA8-25B | 7/18/97 | 1.5 ft. | 900 | 120 | 3600 |
| | SSIA8-26 | SSIA8-26A | 7/18/97 | 0 ft. | 2900 | 520 | 25000 |
| | | SSIA8-26B | 7/18/97 | 1.5 ft. | 290 | 410 | 8100 |
| | SSIA8-27 | SSIA8-27A | 7/18/97 | 0 ft. | 3300 | 380 | 8100 |
| | | SSIA8-27B | 7/18/97 | 1.5 ft. | 240 | 33 | 790 |
| | | SSIA8-27C | 7/18/97 | 3 ft. | 20 U | 10 U | 170 |
| | SSIA8-28 | SSIA8-28A | 7/18/97 | 0 ft. | 4400 | 1800 | 7300 |
| | | SSIA8-28B | 7/18/97 | 1.5 ft. | 3300 | 1300 | 19000 |
| | | SSIA8-28C | 7/18/97 | 3 ft. | 20 U | 10 U | 60 |
| | | SSIA8-28D | 7/18/97 | 4 ft. | 20 U | 10 U | 27 |
| | SSIA8-29 | SSIA8-29A | 7/18/97 | 0 ft. | 2900 | 470 | 9700 |
| | | SSIA8-29B | 7/18/97 | 1.5 ft. | 1100 | 350 | 22000 |
| | SSIA8-30 | SSIA8-30A | 7/18/97 | 0 ft. | 2000 | 840 | 20000 |
| | | SSIA8-30A2 | 7/18/97 | 0 ft. | 2300 | 910 | 17000 |
| | | SSIA8-30B | 7/18/97 | 1.5 ft. | 220 | 36 | 8100 |
| | SSIA8-31 | SSIA8-31A | 7/18/97 | 0 ft. | 48 | 10 U | 400 |
| | | SSIA8-31B | 7/18/97 | 1.5 ft. | 94 | 280 | 9900 |
| | | SSIA8-31C | 7/18/97 | 3 ft. | 20 U | 44 | 7100 |
| | EP-67 | EP-67A | 5/28/97 | 0 ft. | 1400 | 470 | 9400 |
| | | EP-67B | 5/28/97 | 5 ft. | 320 | 200 | 550 |
| | | EP-67C | 5/28/97 | 10 ft. | 340 | 59 | 25 |
| | | EP-67D | 5/28/97 | 15 ft. | 240 | 82 | 18 |
| | | EP-67E | 5/28/97 | 20 ft. | 310 | 10 U | 27 |
| | | EP-67F | 5/28/97 | 25 ft. | 350 | 10 U | 10 U |
| | | EP-67G | 5/28/97 | 30 ft. | 170 | 10 U | 16 |
| | | EP-67H | 5/28/97 | 35 ft. | 140 | 13 | 21 |
| | | EP-67I | 5/28/97 | 40 ft. | 38 | 10 U | 10 U |
| | | EP-67J | 5/28/97 | 45 ft. | 20 U | 10 U | 20 |
| | | EP-67K | 5/28/97 | 50 ft. | 20 U | 10 U | 11 |

## Table 2-28

## Summary of Soil Sample Results for Investigation Area 8 (Bedding and Unloading Buildings Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | EP-68 | EP-68A | 5/29/97 | 0 ft. | 20 U | 10 U | 140 J4 |
| | | EP-68A2 | 5/29/97 | 0 ft. | 20 U | 10 U | 24 J4 |
| | | EP-68B | 5/29/97 | 5 ft. | 20 U | 10 U | 29 J4 |
| | | EP-68C | 5/29/97 | 10 ft. | 20 U | 10 U | 18 J4 |
| | | EP-68D | 5/29/97 | 15 ft. | 20 U | 10 U | 33 J4 |
| | | EP-68E | 5/29/97 | 20 ft. | 20 U | 10 U | 14 J4 |
| | | EP-68F | 5/29/97 | 25 ft. | 20 U | 10 U | 24 J4 |
| | | EP-68G | 5/29/97 | 30 ft. | 21 | 10 U | 11 J4 |
| | | EP-68H | 5/29/97 | 40 ft. | 20 U | 10 U | 10 J4 |
| | | EP-68I | 5/29/97 | 45 ft. | 20 U | 10 U | 10 J4 |
| | | EP-68J | 5/29/97 | 65 ft. | 20 U | 10 U | 34 J4 |
| | | | | | | | |
| | EP-69 | EP-69A | 5/30/97 | 0 ft. | 650 | 150 | 6100 |
| | | EP-69B | 5/30/97 | 5 ft. | 28 | 10 U | 120 |
| | | EP-69C | 5/30/97 | 15 ft. | 40 | 10 U | 53 |
| | | EP-69D | 5/30/97 | 20 ft. | 20 U | 10 U | 11 |
| | | EP-69E | 5/30/97 | 25 ft. | 20 U | 10 U | 20 |
| | | EP-69F | 5/30/97 | 30 ft. | 20 U | 10 U | 26 |
| | | | | | | | |

Notes:

All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.

U: Less than listed value (detection limit)

NA: Not applicable

All concentrations in milligrams per kilogram (mg/kg)

Depth in feet below ground surface.

## Table 2-29

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-8 (Bedding and Unloading Building Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA8** | | | | | | | |
| **EP-15** | 1/24/00 | | 0.009 | | 0.005 U | | 0.01 UJ1 |
| | 4/26/00 | | 0.007 | | 0.005 U | | 0.004 |
| | 8/3/00 | | 0.007 | | 0.005 U | | 0.005 U |
| | 11/2/00 | | 0.008 | | 0.005 U | | 0.003 |
| | 11/2/00 | | 0.009 | | 0.005 U | | 0.003 U |
| | 2/12/01 | | 0.011 | | 0.005 U | | 0.003 U |
| | 5/8/01 | | 0.013 | | 0.008 | | 0.004 |
| | 7/19/01 | 0.015 | 0.013 | 0.005 | 0.005 U | 0.003 U | 0.003 U,UJ4 |
| **EP-67** | 1/24/00 | | 0.009 | | 0.005 U | | 0.011 UJ1 |
| | 4/24/00 | | 0.02 | | 0.005 U | | 0.009 UJ1 |
| | 8/2/00 | | 0.01 | | 0.005 U | | 0.005 U |
| | 8/2/00 | | 0.011 | | 0.005 U | | 0.009 |
| | 10/31/00 | | 0.01 | | 0.005 U | | 0.003 |
| | 2/8/01 | | 0.014 | | 0.005 U | | 0.003 U |
| | 2/8/01 | | 0.015 | | 0.005 U | | 0.004 |
| | 5/7/01 | | 0.018 | | 0.005 U | | 0.003 U |
| | 7/17/01 | 0.026 | 0.028 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| **EP-103** | 1/24/00 | | 0.011 | | 0.005 U | | 0.013 UJ1 |
| | 4/26/00 | | 0.016 | | 0.005 U | | 0.01 |
| | 8/4/00 | | 0.023 | | 0.007 | | 0.003 U |
| | 11/2/00 | | 0.008 | | 0.005 U | | 0.003 U |
| | 2/12/01 | | 0.022 | | 0.005 U | | 0.003 U |
| | 5/8/01 | | 0.019 | | 0.007 | | 0.003 U |
| | 7/19/01 | 0.044 | 0.04 | 0.005 U | 0.005 U | 0.003 U | 0.003 U,UJ4 |
| **EP-104** | 1/24/00 | | 0.08 | | 0.005 U | | 0.015 UJ1 |
| | 4/26/00 | | 0.072 | | 0.005 U | | 0.015 |
| | 8/3/00 | | 0.082 | | 0.005 U | | 0.008 |
| | 11/1/00 | | 0.091 | | 0.005 U | | 0.011 |
| | 2/12/01 | | 0.084 | | 0.005 U | | 0.003 |
| | 2/12/01 | | 0.087 | | 0.005 U | | 0.003 |
| | 5/8/01 | | 0.081 | | 0.005 U | | 0.005 |
| | 7/18/01 | 0.091 | 0.095 | 0.013 | 0.013 | 0.003 U | 0.006 UJ1 |
| **EP-105** | 1/25/00 | | 0.4 | | 0.005 U | | 0.076 |
| | 4/26/00 | | 0.051 | | 0.005 U | | 0.011 |
| | 8/4/00 | | 0.6 | | 0.005 U | | 0.018 |
| | 11/1/00 | | 0.099 | | 0.005 U | | 0.012 |
| | 2/14/01 | | 0.84 | | 0.005 U | | 0.008 |
| | 5/9/01 | | 0.17 | | 0.005 U | | 0.1 |
| | 7/19/01 | 0.94 | 0.97 | 0.005 U | 0.005 U | 0.003 U | 0.005 J4 |
| **EP-106** | 1/25/00 | | 0.007 | | 0.005 U | | 0.014 UJ1 |
| | 4/26/00 | | 0.005 U | | 0.005 U | | 0.003 U |
| | 8/2/00 | | 0.006 | | 0.005 U | | 0.006 |
| | 11/2/00 | | 0.007 | | 0.005 U | | 0.003 U |
| | 2/12/01 | | 0.017 | | 0.015 | | 0.006 |

# Table 2-29

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-8 (Bedding and Unloading Building Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| EP-106 | 5/9/01 | | 0.014 | | 0.005 U | | 0.003 U |
| | 7/18/01 | 0.05 | 0.049 | 0.073 | 0.07 | 0.003 U | 0.003 U |
| EP-107 | 1/24/00 | | 0.012 | | 0.005 U | | 0.009 UJ1 |
| | 4/25/00 | | 0.022 | | 0.005 U | | 0.003 U |
| | 8/3/00 | | 0.022 | | 0.005 U | | 0.005 U |
| | 11/3/00 | | 0.029 | | 0.029 | | 0.003 U |
| | 2/12/01 | | 0.03 | | 0.005 | | 0.003 U |
| | 5/8/01 | | 0.026 | | 0.006 | | 0.003 U |
| | 7/17/01 | 0.019 | 0.022 | 0.005 U | 0.005 U | 0.003 U | 0.004 |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met
J2 calibration range exceeded or significant deviation from known values. Possible bias.
J3 Holding time not met. Indicates low bias.
J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.
UJ1 Blank contamination. Indicates possible high bias and/or false positive.
UJ2 Calibration range exceeded or significant deviation from known value.
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusuable (compound may or may not be present). Resampling and/ or reanalysis is necessary for verification.

A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals
T Total Metals

# Table 2-30

## Summary of Soil Sample Results for Investigation Area 9
## (Arroyo Down Gradient of Ponds 5 and 6)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III | BH9-1-6 | BH9-1-6A | 5/16/01 | 0-1 ft. | 1000 | 500 | 1900 |
| | | BH9-1-6B | 5/16/01 | 2-3 ft. | 81 | 200 | 47 |
| | | BH9-1-6C | 5/16/01 | 3-4 ft. | 110 | 230 | 44 |
| | | BH9-1-6D | 5/16/01 | 4-5 ft. | 62 | 19 | 68 |
| | | BH9-1-6E | 5/16/01 | 5-6 ft. | 50 | 10 U | 56 |
| | BH9-1-7 | BH9-1-7A | 5/16/01 | 0-1 ft. | 8500 | 6800 | 11000 |
| | | BH9-1-7B | 5/16/01 | 1-2 ft. | 200 | 110 | 1000 |
| | | BH9-1-7C | 5/16/01 | 2-3 ft. | 19000 | 8600 | 35000 |
| | | BH9-1-7D1 | 5/17/01 | 4-5 ft. | 87 | 61 | 550 |
| | | BH9-1-7D2 | 5/17/01 | 4-5 ft. | 76 | 42 | 430 |
| | | BH9-1-7E | 5/17/01 | 5-6 ft. | 41 | 110 | 560 |
| | BH9-1-8 | BH9-1-8A | 5/17/01 | 0-1 ft. | 1300 | 530 | 3400 |
| | | BH9-1-8B | 5/17/01 | 1-2 ft. | 54 | 12 | 130 |
| | | BH9-1-8C | 5/17/01 | 2-3 ft. | 60 | 14 | 120 |
| | | BH9-1-8D | 5/17/01 | 4-5 ft. | 230 | 68 | 480 |
| | | BH9-1-8E1 | 5/17/01 | 5-6 ft. | 50 | 16 | 96 |
| | | BH9-1-8E2 | 5/17/01 | 5-6 ft. | 55 | 19 | 98 |
| | BH9-1-9 | BH9-1-9A | 5/17/01 | 0-1 ft. | 1700 | 610 | 6100 |
| | | BH9-1-9B | 5/17/01 | 1-2 ft. | 190 | 73 | 520 |
| | | BH9-1-9C1 | 5/17/01 | 2-3 ft. | 370 | 170 | 930 |
| | | BH9-1-9C2 | 5/17/01 | 2-3 ft. | 1600 | 1100 | 4800 |
| | | BH9-1-9D | 5/17/01 | 3-4 ft. | 200 | 190 | 330 |
| | | BH9-1-9E | 5/17/01 | 5-6 ft. | 240 | 400 | 160 |
| | | BH9-1-9F | 5/17/01 | 6-7 ft. | 100 | 88 | 41 |
| | | BH9-1-9G | 5/17/01 | 7-8 ft. | 75 | 150 | 28 |
| | BH9-1-10 | BH9-1-10A | 5/17/01 | 0-1 ft. | 3500 | 1600 | 9500 |
| | | BH9-1-10B | 5/17/01 | 1-2 ft. | 190 | 64 | 600 |
| | | BH9-1-10C | 5/17/01 | 2-3 ft. | 250 | 87 | 860 |
| | | BH9-1-10D | 5/17/01 | 3-4 ft. | 220 | 75 | 270 |
| | | BH9-1-10E1 | 5/17/01 | 4-5 ft. | 1000 | 320 | 3000 |
| | | BH9-1-10E2 | 5/17/01 | 4-5 ft. | 500 | 140 | 1500 |
| | | BH9-1-10F | 5/17/01 | 5-6 ft. | 160 | 37 | 340 |
| | BH9-1-11 | BH9-1-11A | 5/17/01 | 0-1 ft. | 2500 | 1300 | 6100 |
| | | BH9-1-11B | 5/17/01 | 1-2 ft. | 95 | 110 | 91 |
| | | BH9-1-11C | 5/17/01 | 2-3 ft. | 180 | 170 | 76 |
| | | BH9-1-11D | 5/17/01 | 3-4 ft. | 280 | 64 | 36 |
| | BH9-1-12 | BH9-1-12A | 5/21/01 | 0-1 ft. | 1300 | 510 | 2700 |
| | | BH9-1-12B | 5/21/01 | 1-2 ft. | 160 | 65 | 23 |
| | | BH9-1-12C | 5/21/01 | 3-4 ft. | 42 | 77 | 25 |

# Table 2-30

## Summary of Soil Sample Results for Investigation Area 9
## (Arroyo Down Gradient of Ponds 5 and 6)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| Phase III cont. | BH9-1-13 | BH9-1-13A | 5/24/01 | 0-1 ft. | 12000 | 5400 | 10000 |
| | | BH9-1-13B | 5/24/01 | 1-2 ft. | 450 | 200 | 1300 |
| | | BH9-1-13C | 5/17/01 | 2-3 ft. | 5200 | 3500 | 13000 |
| | | BH9-1-13D | 5/17/01 | 3-4 ft. | 10000 | 6400 | 17000 |
| | | BH9-1-13E | 5/24/01 | 4-5 ft. | 230 | 180 | 1300 |
| | | BH9-1-13F | 5/24/01 | 5-6 ft. | 150 | 180 | 860 |
| | | BH9-1-13G | 5/24/01 | 6-7 ft. | 5000 | 2900 | 12000 |
| | | BH9-1-13H | 5/24/01 | 7-8 ft. | 4100 | 2600 | 9000 |
| | | | | | | | |
| | BH9-1-14 | BH9-1-14A1 | 5/24/01 | 0-1 ft. | 1800 | 790 | 5600 |
| | | BH9-1-14A2 | 5/24/01 | 0-1 ft. | 1300 | 590 | 3800 |
| | | BH9-1-14B | 5/24/01 | 1-2 ft. | 2000 | 1600 | 7000 |
| | | BH9-1-14C | 5/24/01 | 2-3 ft. | 100 | 55 | 450 |
| | | BH9-1-14D | 5/24/01 | 3-4 ft. | 68 | 65 | 730 |
| | | BH9-1-14E | 5/24/01 | 4-5 ft. | 69 | 61 | 450 |
| | | BH9-1-14F | 5/24/01 | 6-7 ft. | 2400 | 630 | 1400 |
| | | | | | | | |
| | BH9-1-15 | BH9-1-15A | 5/24/01 | 0-1 ft. | 10000 | 4200 | 8800 |
| | | BH9-1-15B | 5/24/01 | 1-2 ft. | 2200 | 520 | 4800 |
| | | BH9-1-15C | 5/24/01 | 2-3 ft. | 210 | 220 | 890 |
| | | BH9-1-15D | 5/24/01 | 3-4 ft. | 60 | 140 | 540 |
| | | BH9-1-15E | 5/24/01 | 4-5 ft. | 310 | 240 | 1200 |
| | | | | | | | |
| | BH9-1-16 | BH9-1-16A1 | 5/24/01 | 0-1 ft. | 2300 | 510 | 29000 |
| | | BH9-1-16A2 | 5/24/01 | 0-1 ft. | 2000 | 540 | 23000 |
| | | BH9-1-16B | 5/24/01 | 1-2 ft. | 250 | 110 | 1900 |
| | | BH9-1-16C | 5/24/01 | 2-3 ft. | 110 | 21 | 150 |
| | | BH9-1-16D | 5/24/01 | 3-4 ft. | 91 | 14 | 82 |
| | | BH9-1-16E | 5/24/01 | 4-5 ft. | 290 | 35 | 4000 |
| | | | | | | | |
| | BH9-1-17 | BH9-1-17A | 5/24/01 | 0-1 ft. | 1600 | 360 | 360 |
| | | BH9-1-17B | 5/24/01 | 1-2 ft. | 600 | 250 | 110 |
| | | | | | | | |
| | BH9-1-18 | BH9-1-18A | 5/24/01 | 0-1 ft. | 530 | 510 | 4100 |
| | | BH9-1-18A | 5/24/01 | 0-1 ft. | 481 | 507 | 4413 |
| | | BH9-1-18B | 5/24/01 | 1-2 ft. | 100 | 10 U | 110 |
| | | BH9-1-18C | 5/24/01 | 2-3 ft. | 110 | 13 | 160 |
| | | BH9-1-18C | 5/24/01 | 2-3 ft. | 74 | 10 U | 175 |
| | | BH9-1-18D | 5/25/01 | 4-5 ft. | 230 | 75 | 780 |
| | | BH9-1-18E | 5/25/01 | 5-6 ft. | 72 | 10 U | 110 |
| | | BH9-1-18F | 5/25/01 | 6-7 ft. | 65 | 10 U | 48 |
| | | BH9-1-18G1 | 5/25/01 | 7-8 ft. | 77 | 13 | 150 |
| | | BH9-1-18G2 | 5/25/01 | 7-8 ft. | 69 | 10 U | 94 |

## Table 2-30

## Summary of Soil Sample Results for Investigation Area 9
## (Arroyo Down Gradient of Ponds 5 and 6)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III cont. | BH9-1-18 | BH9-1-18H | 5/25/01 | 8-9 ft. | 67 | 17 | 69 |
| | | BH9-1-18I | 5/25/01 | 9-10 ft. | 54 | 18 | 200 |
| | | BH9-1-18J | 5/25/01 | 10-11 ft. | 62 | 10 U | 53 |
| | BH9-6-5 | BH9-6-5A | 5/25/01 | 0-1 ft. | 4600 | 910 | 16000 |
| | | BH9-6-5B | 5/25/01 | 1-2 ft. | 4300 | 1900 | 31000 |
| | | BH9-6-5C | 5/25/01 | 2-3 ft. | 9700 | 12000 | 100000 |
| | | BH9-6-5D | 5/25/01 | 3-4 ft. | 9100 | 12000 | 92000 |
| | | BH9-6-5E1 | 5/25/01 | 4-5 ft. | 260 | 770 | 2000 |
| | | BH9-6-5E2 | 5/25/01 | 4-5 ft. | 770 | 1300 | 5400 |
| | | BH9-6-5F | 5/25/01 | 5-6 ft. | 48 | 17 | 45 |
| | BH9-6-6 | BH9-6-6A | 5/25/01 | 0-1 ft. | 3400 | 5100 | 12000 |
| | | BH9-6-6B | 5/25/01 | 1-2 ft. | 49 | 49 | 180 |
| | BH9-6-7 | BH9-6-7A | 5/25/01 | 0-1 ft. | 31000 | 5600 | 31000 |
| | | BH9-6-7B | 5/25/01 | 1-2 ft. | 2900 | 8100 | 32000 |
| | | BH9-6-7C | 5/25/01 | 2-3 ft. | 130 | 54 | 390 |
| | | BH9-6-7D | 5/25/01 | 3-4 ft. | 67 | 10 U | 55 |
| | BH9-6-8 | BH9-6-8A | 5/25/01 | 0-1 ft. | 9200 | 4000 | 30000 |
| | | BH9-6-8B | 5/25/01 | 1-2 ft. | 200 | 280 | 1200 |
| | | BH9-6-8B | 5/25/01 | 1-2 ft. | 180 | 359 | 1183 |
| | | BH9-6-8C | 5/25/01 | 2-2.5 ft. | 54 | 10 U | 68 |
| | BH9-6-9 | BH9-6-9A | 5/25/01 | 0-1 ft. | 20000 | 7000 | 65000 |
| | | BH9-6-9B1 | 5/25/01 | 1-2 ft. | 1400 | 1500 | 6600 |
| | | BH9-6-9B2 | 5/25/01 | 1-2 ft. | 3700 | 5900 | 44000 |
| | | BH9-6-9C | 5/25/01 | 2-3 ft. | 100 | 30 | 250 |
| | | BH9-6-9C | 5/25/01 | 2-3 ft. | 54 | 20 | 227 |
| | | BH9-6-9D | 5/25/01 | 3-3.5 ft. | 38 | 20 | 62 |
| | | BH9-6-9D | 5/25/01 | 3-3.5 ft. | 26 | 14 | 74 |
| | BH9-6-10 | BH9-6-10A | 5/25/01 | 0-1 ft. | 5200 | 2100 | 19000 |
| | | BH9-6-10B | 5/25/01 | 1-2 ft. | 280 | 260 | 1600 |
| | | BH9-6-10C | 5/25/01 | 2-3 ft. | 62 | 46 | 73 |
| | | BH9-6-10D | 5/25/01 | 3-4 ft. | 73 | 31 | 63 |
| | BH9-6-11 | BH9-6-11A | 5/25/01 | 0-1 ft. | 6200 | 3900 | 46000 |
| | | BH9-6-11B | 5/25/01 | 1-2 ft. | 3100 | 8200 | 63000 |
| | | BH9-6-11C | 5/25/01 | 2-3 ft. | 1400 | 2200 | 14000 |
| | | BH9-6-11D | 5/25/01 | 3-4 ft. | 94 | 31 | 230 |
| | BH9-6-12 | BH9-6-12A | 5/25/01 | 0-1 ft. | 7200 | 1800 | 24000 |

## Table 2-30

## Summary of Soil Sample Results for Investigation Area 9 (Arroyo Down Gradient of Ponds 5 and 6) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III cont. | BH9-6-12 | BH9-6-12B | 5/25/01 | 1-2 ft. | 6100 | 8300 | 120000 |
| | | BH9-6-12C | 5/25/01 | 2-2.5 ft. | 400 | 450 | 2900 |
| | | BH9-6-12C | 5/25/01 | 2-2.5 ft. | 285 | 433 | 2803 |
| | BH9-6-13 | BH9-6-13A | 5/25/01 | 0-1.2 ft. | 4900 | 7900 | 60000 |
| | BH9-6-14 | BH9-6-14A1 | 5/25/01 | 0-1 ft. | 3800 | 1200 | 6000 |
| | | BH9-6-14A2 | 5/25/01 | 0-1 ft. | 3700 | 1100 | 6100 |
| | | BH9-6-14B | 5/25/01 | 1-2 ft. | 17000 | 3100 | 59000 |
| | | BH9-6-14C | 5/25/01 | 2-3 ft. | 29000 | 5000 | 65000 |
| | | BH9-6-14D | 5/25/01 | 3-4 ft. | 4500 | 6700 | 56000 |
| | BH9-6-15 | BH9-6-15A | 5/25/01 | 0-1 ft. | 10000 | 4900 | 64000 |
| | | BH9-6-15B1 | 5/25/01 | 1-2 ft. | 120 | 17 | 290 |
| | | BH9-6-15B2 | 5/25/01 | 1-2 ft. | 82 | 10 U | 140 |
| | | BH9-6-15C | 5/25/01 | 2-3 ft. | 91 | 12 | 160 |
| | BH9-6-16 | BH9-6-16A | 5/25/01 | 0-1 ft. | 3200 | 1600 | 16000 |
| | | BH9-6-16B1 | 5/25/01 | 1-2 ft. | 1400 | 790 | 10000 |
| | | BH9-6-16B2 | 5/25/01 | 1-2 ft. | 760 | 390 | 4700 |
| | | BH9-6-16C | 5/25/01 | 2-3 ft. | 140 | 14 | 66 |
| | | BH9-6-16D | 5/25/01 | 3-4 ft. | 43 | 13 | 55 |
| | BH9-6-17 | BH9-6-17A | 5/25/01 | 0-1 ft. | 14000 | 3400 | 34000 |
| | | BH9-6-17B | 5/25/01 | 1-2 ft. | 2400 | 1200 | 18000 |
| | | BH9-6-17C | 5/25/01 | 2-3 ft. | 4600 | 13000 | 90000 |
| | | BH9-6-17D | 5/25/01 | 3-4 ft. | 130 | 77 | 550 |
| | BH9-6-18 | BH9-6-18A | 5/26/01 | 0-1 ft. | 680 | 120 | 6000 |
| | | BH9-6-18B | 5/26/01 | 1-2 ft. | 2100 | 230 | 7800 |
| | | BH9-6-18C | 5/26/01 | 2-3 ft. | 980 | 160 | 2600 |
| | | BH9-6-18D | 5/26/01 | 3-4 ft. | 4500 | 400 | 12000 |
| | | BH9-6-18E | 5/26/01 | 4-5 ft. | 950 | 140 | 4500 |
| | | BH9-6-18F | 5/26/01 | 5-6 ft. | 900 | 250 | 6800 |
| | | BH9-6-18G | 5/26/01 | 6-7 ft. | 4700 | 1800 | 14000 |
| | | BH9-6-18H | 5/26/01 | 7-8 ft. | 6600 | 4700 | 30000 |
| | BH9-6-19 | BH9-6-19A | 5/26/01 | 0-1 ft. | 5000 | 5200 | 19000 |
| | | BH9-6-19B | 5/26/01 | 1-2 ft. | 74 | 21 | 140 |
| | | BH9-6-19C1 | 5/26/01 | 2-3 ft. | 64 | 16 | 73 |
| | | BH9-6-19C2 | 5/26/01 | 2-3 ft. | 62 | 19 | 92 |
| | | BH9-6-19D | 5/26/01 | 3-4 ft. | 53 | 16 | 38 |
| | BH9-6-20 | BH9-6-20A | 5/26/01 | 0-1 ft. | 30000 | 8600 | 20000 |
| | | BH9-6-20B | 5/26/01 | 1-1.5 ft. | 11000 | 6200 | 79000 |

# Table 2-30

## Summary of Soil Sample Results for Investigation Area 9
## (Arroyo Down Gradient of Ponds 5 and 6)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III cont. | BH9-6-20 | BH9-6-20C | 5/26/01 | 5-6 ft. | 140 | 27 | 150 |
| | | BH9-6-20D | 5/26/01 | 6-7 ft. | 100 | 26 | 100 |
| | | BH9-6-20E | 5/26/01 | 7-8 ft. | 67 | 17 | 360 |
| | BH9-6-21 | BH9-6-21D | 5/26/01 | 3-4 ft. | 4400 | 14000 | 47000 |
| | | BH9-6-21A | 5/26/01 | 0-1 ft. | 18000 | 4700 | 32000 |
| | | BH9-6-21B | 5/26/01 | 1-2 ft. | 5900 | 16000 | 58000 |
| | | BH9-6-21C | 5/26/01 | 2-3 ft. | 4700 | 14000 | 49000 |
| | BH9-6-22 | BH9-6-22A | 5/26/01 | 0-1 ft. | 12000 | 4200 | 15000 |
| | | BH9-6-22B | 5/26/01 | 1-2 ft. | 1300 | 1100 | 7700 |
| | | BH9-6-22C | 5/26/01 | 2-3 ft. | 83 | 10 U | 51 |
| | | BH9-6-22D | 5/26/01 | 3-4 ft. | 53 | 12 | 70 |
| | BH9-6-23 | BH9-6-23A | 5/26/01 | 0-1 ft. | 11000 | 5900 | 34000 |
| | | BH9-6-23B | 5/26/01 | 1-2 ft. | 6000 | 3500 | 33000 |
| Phase II | BH9-5-1 | BH9-5-1A | 2/9/00 | 0-1 ft. | 1800 | 120 | 7900 |
| | | BH9-5-1B | 2/9/00 | 1-2 ft. | 190 | 10 U | 890 |
| | | BH9-5-1C | 2/9/00 | 2-3 ft. | 210 | 10 U | 1400 |
| | | BH9-5-1D | 2/9/00 | 3-4 ft. | 650 | 35 | 7500 |
| | | BH9-5-1E | 2/9/00 | 4-5 ft. | 270 | 10 U | 1200 |
| | | BH9-5-1F | 2/9/00 | 5-6 ft. | 91 | 10 U | 320 |
| | | BH9-5-1G | 2/9/00 | 10-11 ft. | 20 | 11 | 510 |
| | BH9-5-2 | BH9-5-2A | 2/9/00 | 0-1 ft. | 1000 | 390 | 12000 |
| | | BH9-5-2B | 2/9/00 | 1-2 ft. | 1400 | 130 | 9600 |
| | | BH9-5-2C | 2/9/00 | 2-3 ft. | 1200 | 74 | 6000 |
| | | BH9-5-2D | 2/9/00 | 3-4 ft. | 560 | 33 | 3600 |
| | | BH9-5-2E | 2/9/00 | 4-5 ft. | 1200 | 54 | 6200 |
| | | BH9-5-2F | 2/9/00 | 5-6 ft. | 220 | 25 | 2600 |
| | | BH9-5-2G | 2/9/00 | 7-8 ft. | 22 | 10 U | 190 |
| | BH9-5-3 | BH9-5-3A | 2/9/00 | 0-1 ft. | 1600 | 700 | 18000 |
| | | BH9-5-3B | 2/9/00 | 1-2 ft. | 28 | 22 | 710 |
| | | BH9-5-3C | 2/9/00 | 2-3 ft. | 32 | 30 | 1200 |
| | | BH9-5-3D | 2/9/00 | 3-4 ft. | 24 | 23 | 900 |
| | BH9-5-4 | BH9-5-4A | 2/9/00 | 0-1 ft. | 1800 | 790 | 23000 |
| | | BH9-5-4B | 2/9/00 | 1-2 ft. | 1200 | 550 | 17000 |
| | | BH9-5-4C | 2/9/00 | 2-3 ft. | 180 | 54 | 3100 |
| | | BH9-5-4D | 2/9/00 | 3-4 ft. | 200 | 13 | 3600 |
| | | BH9-5-4E | 2/9/00 | 4-5 ft. | 74 | 11 | 1300 |
| | | BH9-5-4F | 2/9/00 | 5-6 ft. | 43 | 10 U | 1000 |

## Table 2-30

## Summary of Soil Sample Results for Investigation Area 9
## (Arroyo Down Gradient of Ponds 5 and 6)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | BH9-5-5 | BH9-5-5A | 2/9/00 | 0-1 ft. | 4000 | 1300 | 30000 |
| | | BH9-5-5B | 2/9/00 | 1-2 ft. | 1400 | 370 | 12000 |
| | | BH9-5-5C | 2/9/00 | 2-3 ft. | 750 | 63 | 6700 |
| | | BH9-5-5D | 2/9/00 | 3-4 ft. | 71 | 10 U | 940 |
| | BH9-5-6 | BH9-5-6A | 2/9/00 | 0-1 ft. | 1500 | 840 | 12000 |
| | | BH9-5-6B | 2/9/00 | 1-2 ft. | 1700 | 760 | 20000 |
| | | BH9-5-6C | 2/9/00 | 2-3 ft. | 88 | 44 | 1900 |
| | | BH9-5-6D | 2/9/00 | 3-4 ft. | 10 | 10 U | 120 |
| | BH9-5-7 | BH9-5-7A | 2/9/00 | 0-1 ft. | 3900 | 1200 | 31000 |
| | | BH9-5-7B | 2/9/00 | 1-2 ft. | 900 | 300 | 9700 |
| | | BH9-5-7C | 2/9/00 | 2-3 ft. | 240 | 85 | 3700 |
| | | BH9-5-7D | 2/9/00 | 3-4 ft. | 27 | 10 U | 560 |
| Phase I | EP-77 | EP-77A | 6/4/97 | 0.5 ft. | 200 | 11 | 2600 |
| | | EP-77B | 6/4/97 | 20 ft. | 140 | 43 | 950 |
| | | EP-77C | 6/4/97 | 25 ft. | 20 U | 10 U | 90 |
| | | EP-77D | 6/4/97 | 30 ft. | 33 | 10 U | 36 |
| | | EP-77E | 6/4/97 | 35 ft. | 28 | 10 U | 37 |
| | | EP-77F | 6/4/97 | 40 ft. | 73 | 10 U | 22 |
| | | EP-77G | 6/4/97 | 45 ft. | 49 | 10 U | 25 |
| | | EP-77H | 6/4/97 | 50 ft. | 20 | 10 U | 20 |
| | EP-88 | EP-88A | 6/17/97 | 0 ft. | 550 | 150 | 3600 |
| | | EP-88B | 6/17/97 | 5 ft. | 50 | 120 | 2700 |
| | | EP-88C | 6/17/97 | 10 ft. | 20 U | 10 U | 35 |
| | | EP-88C2 | 6/17/97 | 10 ft. | 20 U | 10 U | 19 |
| | | EP-88D | 6/17/97 | 15 ft. | 20 U | 10 U | 35 |
| | | EP-88E | 6/17/97 | 20 ft. | 20 U | 10 U | 58 |
| | | EP-88F | 6/17/97 | 25 ft. | 20 U | 10 U | 19 |
| | | EP-88G | 6/17/97 | 30 ft. | 20 U | 10 U | 18 |
| | | EP-88H | 6/17/97 | 35 ft. | 20 U | 10 U | 10 U |
| | POND 1 | Sed/soil | 7/15/96 | A | 4541 | 1269 | 6964 |
| | | Sed/soil | 7/15/96 | B | 5693 | 1257 | 9695 |
| | | Sed/soil | 7/15/96 | C | 768 | 257 | 1790 |
| | POND 5 | Sed/soil | 7/15/96 | A | 4065 | 1158 | 63330 |
| | | Sed/soil | 7/15/96 | B | 2049 | 597 | 32430 |
| | | Sed/soil | 7/15/96 | C | 1253 | 212 | 5416 |
| | POND 6 | Sed/soil | 7/15/96 | A | 1120 | 462 | 4296 |
| | | Sed/soil | 7/15/96 | B | 4391 | 1522 | 12290 |

## Table 2-30

## Summary of Soil Sample Results for Investigation Area 9 (Arroyo Down Gradient of Ponds 5 and 6) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I | POND 6 | Sed/soil | 7/15/96 | C | 2399 | 1129 | 7421 |

Notes:
All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg)
Depth in feet below ground surface.
BH9-1-1 to BH9-1-5, BH9-5-8 to BH9-5-11 and BH9-6-1 to BH9-6-4 were Geotechnical Sample locations

# Table 2-31

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-9 (Ponds 1, 5, and 6)
## El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| IA9 | | | | | | | |
| Ponds 5&6 | | | | | | | |
| EM-5 | 1/25/00 | | 2.6 | | 0.016 | | 0.012 UJ1 |
| | 4/26/00 | | 2.3 | | 0.009 | | 0.013 |
| | 8/4/00 | | 1.6 | | 0.006 | | 0.013 |
| | 11/3/00 | | 1.7 | | 0.008 | | 0.006 |
| | 2/14/01 | | 1.8 | | 0.009 | | 0.008 |
| | 5/9/01 | | 1.5 | | 0.005 U | | 0.005 |
| | 7/19/01 | 1.5 | 1.5 | 0.005 U | 0.006 | 0.003 U | 0.005 J4 |
| EM-6 | 1/25/00 | | 0.024 | | 0.005 U | | 0.012 UJ1 |
| | 4/26/00 | | 0.022 | | 0.005 U | | 0.005 |
| | 8/4/00 | | 0.022 | | 0.005 U | | 0.008 |
| | 11/3/00 | | 0.024 | | 0.005 U | | 0.004 |
| | 2/14/01 | | 0.027 | | 0.005 U | | 0.007 |
| | 2/14/01 | | 0.025 | | 0.005 U | | 0.007 |
| | 5/9/01 | | 0.025 | | 0.005 U | | 0.003 |
| | 7/19/01 | 0.04 | 0.042 | 0.005 U | 0.005 U | 0.003 U | 0.004 J4 |
| EP-77 | 1/25/00 | | 7.7 | | 0.012 | | 0.012 UJ1 |
| | 4/28/00 | | 6.5 | | 0.009 | | 0.01 |
| | 4/28/00 | | 6.6 | | 0.009 | | 0.008 |
| | 8/4/00 | | 6.4 | | 0.007 | | 0.008 |
| | 11/3/00 | | 6.2 | | 0.008 | | 0.003 |
| | 2/12/01 | | 3.3 | | 0.005 U | | 0.007 |
| | 5/9/01 | | 1.5 | | 0.005 U | | 0.008 |
| | 5/9/01 | | 1.5 | | 0.005 U | | 0.008 |
| | 7/19/01 | 5.4 | 5.5 | 0.005 U | 0.005 | 0.003 U | 0.004 J4 |
| EP-88 | 1/26/00 | | 0.012 | | 0.005 U | | 0.004 |
| | 1/26/00 | | 0.013 | | 0.005 U | | 0.004 |
| | 4/28/00 | | 0.053 | | 0.004 | | 0.012 |
| | 8/4/00 | | 0.027 | | 0.005 U | | 0 |
| | 11/7/00 | | 0.025 | | 0.005 U | | 0.004 |
| | 2/14/01 | | 0.021 | | 0.005 U | | 0.004 |
| | 5/9/01 | | 0.028 | | 0.005 U | | 0.003 U |
| | 7/19/01 | 0.025 | 0.024 | 0.005 U | 0.005 U | 0.003 U | 0.004 J4 |
| EP-124 | 5/16/01 | | 7.1 | | 0.024 | | 0.19 |
| | 7/27/01 | 10 | 9.8 | 0.005 U | 0.005 U | 0.008 | 0.018 |
| Pond 1 | | | | | | | |
| EP-12 | 2/8/00 | | 2.3 | | 0.005 U | | 0.009 |
| | 2/8/00 | | 2.6 | | 0.005 U | | 0.011 |
| | 5/9/00 | | 2 | | 0.005 U | | 0.024 |
| | 8/16/00 | | 1.8 | | 0.005 U | | 0.028 |
| | 11/14/00 | | 2.1 | | 0.005 U | | 0.028 |
| | 2/26/01 | | 0.92 | | 0.005 U | | 0.015 J4 |
| | 5/17/01 | | 0.83 | | 0.005 U | | 0.005 |
| | 7/30/01 | 0.71 | 0.96 | 0.005 U | 0.005 U | 0.003 | 0.01 |

# Table 2-31

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-9 (Ponds 1, 5, and 6)
## El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| EM-2 | 1/25/00 | | 1 | | 0.005 U | | 0.019 UJ1 |
| | 4/26/00 | | 0.8 | | 0.005 U | | 0.004 |
| | 8/3/00 | | 0.68 | | 0.005 U | | 0.008 |
| | 11/1/00 | | 0.56 | | 0.005 U | | 0.004 |
| | 2/9/01 | | 0.57 | | 0.005 U | | 0.003 |
| | 5/8/01 | | 0.83 | | 0.005 U | | 0.003 U |
| | 5/8/01 | | 0.88 | | 0.005 U | | 0.003 U |
| | 7/18/01 | 0.99 | 1.1 | 0.005 U | 0.005 U | 0.003 U | 0.006 UJ1 |
| EM-4 | 1/25/00 | | 0.005 U | | 0.005 U | | 0.007 UJ1 |
| | 4/26/00 | | 0.01 | | 0.005 U | | 0.003 U |
| | 4/26/00 | | 0.01 | | 0.005 U | | 0.003 U |
| | 8/3/00 | | 0.005 U | | 0.005 U | | 0.005 U |
| | 11/1/00 | | 0.005 U | | 0.005 U | | 0.003 U |
| | 2/9/01 | | 0.007 | | 0.005 U | | 0.003 U |
| | 5/7/01 | | 0.005 | | 0.005 U | | 0.003 U |
| | 7/18/01 | 0.019 | 0.024 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met
J2 calibration range exceeded or significant deviation from known values. Possible bias.
J3 Holding time not met. Indicates low bias.
J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.
UJ1 Blank contamination. Indicates possible high bias and/or false positive.
UJ2 Calibration range exceeded or significant deviation from known value.
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusuable (compound may or may not be present). Resampling and/ or reanalysis is necessary for verification.
A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals
T Total Metals

# Table 2-32

## Summary of Soil Sample Results for Investigation Area 10 (Facility Entrance Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II | EP-110 | EP-110A | 10/18/99 | 0-1 ft. | 490 | 100 | 3000 |
| | | EP-110B | 10/18/99 | 1-2 ft. | 190 | 67 | 3100 |
| | | EP-110C | 10/18/99 | 2-3 ft. | 72 | 25 | 210 |
| | | EP-110D | 10/18/99 | 3-4 ft. | 71 | 10 U | 60 |
| | | EP-110E | 10/18/99 | 4-5 ft. | 51 | 10 U | 43 |
| | | EP-110F | 10/18/99 | 7-8 ft. | 11 | 10 U | 84 |
| | | EP-110F2 | 10/18/99 | 7-8 ft. | 12 | 10 U | 68 |
| | | | | | | | |
| Phase I | SSENT1 | SSENT1-A | 7/17/97 | 0 ft. | 470 | 75 | 5700 |
| | | SSENT1-B | 7/17/97 | 1.5 ft. | 20 U | 10 U | 300 |
| | | SSENT1-C | 7/17/97 | 3 ft. | 20 U | 10 U | 160 |
| | | SSENT1-D | 7/17/97 | 4 ft. | 20 U | 10 U | 94 |
| | | | | | | | |
| | SSENT2 | SSENT2-A | 7/17/97 | 0 ft. | 340 | 100 | 3300 |
| | | SSENT2-B | 7/17/97 | 1.5 ft. | 20 U | 10 U | 330 |
| | | SSENT2-C | 7/17/97 | 3 ft. | 20 U | 10 U | 430 |
| | | SSENT2-D | 7/17/97 | 4 ft. | 20 U | 10 U | 26 |
| | | | | | | | |
| | SSENT3 | SSENT3-A | 7/17/97 | 0 ft. | 340 | 99 | 2800 |
| | | SSENT3-B | 7/17/97 | 1.5 ft. | 34 | 10 U | 160 |
| | | | | | | | |
| | SSENT4 | SSENT4-A | 7/17/97 | 0 ft. | 190 | 80 | 1800 |
| | | SSENT4-B | 7/17/97 | 1.5 ft. | 35 | 10 U | 37 |
| | | | | | | | |
| | SSENT5 | SSENT5-A | 7/17/97 | 0 ft. | 750 | 160 | 5400 |
| | | SSENT5-B | 7/17/97 | 1.5 ft. | 20 U | 12 | 280 |
| | | SSENT5-B2 | 7/17/97 | 1.5 ft. | 20 U | 10 U | 210 |
| | | | | | | | |
| | SSENT6 | SSENT6-A | 7/17/97 | 0 ft. | 380 | 100 | 3800 |
| | | SSENT6-B | 7/17/97 | 1.5 ft. | 20 U | 34 | 2200 |
| | | SSENT6-C | 7/17/97 | 3 ft. | 20 U | 10 U | 610 |
| | | SSENT6-D | 7/17/97 | 4 ft. | 20 U | 10 U | 38 |
| | | | | | | | |
| | SSENT7 | SSENT7-A | 7/17/97 | 0 ft. | 250 | 93 | 2800 |
| | | SSENT7-B | 7/17/97 | 1.5 ft. | 20 U | 10 U | 30 |
| | | SSENT7-C | 7/17/97 | 3 ft. | 20 U | 10 U | 25 |
| | | | | | | | |
| | SSENT8 | SSENT8-A | 7/17/97 | 0 ft. | 520 | 120 | 3000 |
| | | SSENT8-A2 | 7/17/97 | 0 ft. | 450 | 120 | 2800 |
| | | SSENT8-B | 7/17/97 | 1.5 ft. | 710 | 250 | 1300 |
| | | | | | | | |
| | EP-89 | EP-89A | 6/18/97 | 0 ft. | 34 | 110 | 9600 |
| | | EP-89B | 6/18/97 | 5 ft. | 20 U | 10 U | 42 |
| | | EP-89C | 6/18/97 | 10 ft. | 20 U | 10 U | 180 |

## Table 2-32

## Summary of Soil Sample Results for Investigation Area 10 (Facility Entrance Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | EP-89 | EP-89D | 6/18/97 | 15 ft. | 20 U | 10 U | 22 |
| | | EP-89E | 6/18/97 | 20 ft. | 20 U | 10 U | 39 |
| | | EP-89F | 6/18/97 | 25 ft. | 20 U | 10 U | 92 |
| | | EP-89G | 6/18/97 | 30 ft. | 20 U | 10 U | 14 |
| | | EP-89H | 6/18/97 | 35 ft. | 20 U | 10 U | 44 |
| | | EP-89I | 6/18/97 | 38 ft. | 20 U | 10 U | 14 |

Notes:

All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.

U: Less than listed value (detection limit)

NA: Not applicable

All concentrations in milligrams per kilogram (mg/kg)

Depth in feet below ground surface.

# Table 2-33

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-10 (Plant Entrance Area)
## El Paso Asarco Smelter, Remedial Investigation

| Well ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| EP-110 | 1/24/00 | | 0.009 | | 0.005 U | | 0.02 UJ1 |
| | 4/25/00 | | 0.006 | | 0.005 U | | 0.008 |
| | 8/2/00 | | 0.007 | | 0.005 U | | 0.005 U |
| | 10/31/00 | | 0.008 | | 0.005 U | | 0.003 U |
| | 2/8/01 | | 0.008 | | 0.005 U | | 0.004 |
| | 5/7/01 | | 0.007 | | 0.005 U | | 0.003 U |
| | 7/17/01 | 0.013 | 0.013 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| | | | | | | | |
| EP-89 | 1/24/00 | | 0.007 | | 0.005 U | | 0.015 UJ1 |
| | 4/25/00 | | 0.005 | | 0.005 U | | 0.004 |
| | 4/25/00 | | 0.005 | | 0.005 U | | 0.005 |
| | 8/2/00 | | 0.005 U | | 0.005 U | | 0.019 |
| | 10/31/00 | | 0.005 U | | 0.005 U | | 0.006 |
| | 10/31/00 | | 0.007 | | 0.005 U | | 0.007 |
| | 2/8/01 | | 0.005 | | 0.005 U | | 0.005 |
| | 5/7/01 | | 0.005 | | 0.005 U | | 0.003 |
| | 5/7/01 | | 0.005 | | 0.005 U | | 0.003 U |
| | 7/17/01 | 0.012 | 0.012 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| | | | | | | | |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met
J2 calibration range exceeded or significant deviation from known values. Possible bias.
J3 Holding time not met. Indicates low bias.
J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.
UJ1 Blank contamination. Indicates possible high bias and/or false positive.
UJ2 Calibration range exceeded or significant deviation from known value.
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusuable (compound may or may not be present). Resampling and/ or reanalysis is necessary for verification.
A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals
T Total Metals

# Table 2-34

## Summary of Soil Sample Results for Investigation
## Area 11 (Arroyos East of I-10)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III | BH11-5 | BH11-5A | 5/9/01 | 0-1 ft. | 170 | 31 | 1400 |
| | | BH11-5B | 5/9/01 | 1-2 ft. | 45 | 18 | 460 |
| | | BH11-5C | 5/9/01 | 2-3 ft. | 35 | 10 U | 280 |
| | | BH11-5D | 5/9/01 | 3-4 ft. | 41 | 10 U | 410 |
| | BH11-6 | BH11-6A | 5/9/01 | 0-1 ft. | 95 | 31 | 930 |
| | | BH11-6B | 5/9/01 | 1-2 ft. | 140 | 32 | 980 |
| | BH11-7 | BH11-7A | 5/9/01 | 0-1 ft. | 82 | 18 | 540 |
| | | BH11-7B | 5/9/01 | 1-2 ft. | 89 | 26 | 960 |
| | | BH11-7C | 5/9/01 | 2-3 ft. | 54 | 10 U | 370 |
| | BH11-8 | BH11-8A | 5/9/01 | 0-1 ft. | 98 | 22 | 640 |
| | | BH11-8B | 5/9/01 | 1-2 ft. | 190 | 36 | 1700 |
| | | BH11-8C | 5/9/01 | 2-3 ft. | 53 | 16 | 440 |
| | | BH11-8D | 5/9/01 | 3-4 ft. | 43 | 14 | 340 |
| | BH11-9 | BH11-9A | 5/9/01 | 0-1 ft. | 110 | 20 | 670 |
| | | BH11-9B | 5/9/01 | 1-2 ft. | 59 | 10 | 510 |
| | | BH11-9C1 | 5/9/01 | 2-3 ft. | 62 | 22 | 620 |
| | | BH11-9C2 | 5/9/01 | 2-3 ft. | 29 | 16 | 260 |
| | BH11-10 | BH11-10A | 5/9/01 | 0-1 ft. | 110 | 14 | 620 |
| | | BH11-10B | 5/9/01 | 1-2 ft. | 55 | 13 | 320 |
| | | BH11-10C | 5/9/01 | 2-3 ft. | 68 | 12 | 640 |
| | | BH11-10D | 5/9/01 | 3-4 ft. | 41 | 18 | 260 |
| | BH11-11 | BH11-11A | 5/9/01 | 0-1 ft. | 193 | 45 | 1421 |
| | | BH11-11B | 5/9/01 | 1-2 ft. | 63 | 26 | 760 |
| | | BH11-11C | 5/9/01 | 2-3 ft. | 71 | 19 | 520 |
| | | BH11-11D | 5/9/01 | 3-4 ft. | 60 | 23 | 590 |
| | BH11-12 | BH11-12A | 5/9/01 | 0-1 ft. | 278 | 57 | 1876 |
| | | BH11-12B | 5/9/01 | 1-2 ft. | 35 | 11 | 200 |
| | | BH11-12C | 5/9/01 | 2-3 ft. | 23 | 15 | 130 |
| | | BH11-12D | 5/9/01 | 3-4 ft. | 46 | 14 | 300 |
| | BH11-13 | BH11-13A | 5/9/01 | 0-1 ft. | 91 | 18 | 370 |
| | | BH11-13B | 5/9/01 | 1-2 ft. | 40 | 12 | 360 |
| | | BH11-13C | 5/9/01 | 2-3 ft. | 21 | 15 | 120 |
| | BH11-14 | BH11-14A | 5/9/01 | 0-1 ft. | 146 | 31 | 972 |
| | | BH11-14B | 5/9/01 | 1-2 ft. | 84 | 10 U | 640 |
| | | BH11-14C | 5/9/01 | 2-3 ft. | 32 | 10 U | 180 |
| | | BH11-14D | 5/9/01 | 3-4 ft. | 33 | 12 | 290 |

## Table 2-34

## Summary of Soil Sample Results for Investigation
## Area 11 (Arroyos East of I-10)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| Phase III cont. | BH11-15 | BH11-15A | 7/17/01 | 0-1 ft. | 1200 | 200 | 7900 |
| | | BH11-15B | 7/17/01 | 1-2 ft. | 1300 | 440 | 12000 |
| | | BH11-15C | 7/17/01 | 2-3 ft. | 570 | 140 | 3700 |
| | | BH11-15D | 7/17/01 | 3-4 ft. | 910 | 280 | 7600 |
| | | | | | | | |
| | BH11-16 | BH11-16A | 7/19/01 | 15-16 ft. | 28 | 15 | 260 |
| | | | | | | | |
| | BH11-17 | BH11-17A | 7/19/01 | 25-26 ft. | 25 | 13 | 60 |
| | | | | | | | |
| | BH11-18 | BH11-18A1 | 7/19/01 | 40-41 ft. | 32 | 12 | 130 |
| | | BH11-18A2 | 7/19/01 | 40-41 ft. | 53 | 10 U | 170 |
| | | | | | | | |
| | BH11-19 | BH11-19A | 7/19/01 | 10-11 ft. | 10 | 11 | 34 |
| | | | | | | | |
| | BH11-22 | BH11-22A | 7/20/01 | 20-21 ft. | 37 | 47 | 400 |
| | | | | | | | |
| | BH11-23 | BH11-23A | 7/20/01 | 12-13 ft. | 29 | 13 | 80 |
| | | | | | | | |
| | BH11-24 | BH11-24A | 7/20/01 | 15-16 ft. | 24 | 11 | 43 |
| | | | | | | | |
| | BH11-25 | BH11-25A | 7/20/01 | 10-11 ft. | 22 | 10 U | 26 |
| | | | | | | | |
| | BH11-26 | BH11-26A | 4/30/01 | 0-1 ft. | 34 | 10 | 170 |
| | | BH11-26B | 4/30/01 | 1-2 ft. | 15 | 12 | 73 |
| | | BH11-26C | 4/30/01 | 2-3 ft. | 15 | 10 U | 57 |
| | | BH11-26D | 4/30/01 | 3-4 ft. | 16 | 10 U | 51 |
| | | BH11-26E | 4/30/01 | 4-5 ft. | 33 | 10 U | 59 |
| | | BH11-26F2 | 4/30/01 | 10-11 ft. | 15 | 14 | 58 |
| | | BH11-26G | 4/30/01 | 15-16 ft. | 25 | 10 U | 56 |
| | | BH11-26H | 4/30/01 | 25-26 ft. | 22 | 10 U | 48 |
| | | | | | | | |
| | EP-129 | EP-129A | 5/2/01 | 0-1 ft. | 150 | 33 | 910 |
| | | EP-129B | 5/2/01 | 1-2 ft. | 33 | 10 U | 39 |
| | | EP-129C | 5/2/01 | 2-3 ft. | 32 | 10 U | 36 |
| | | EP-129D | 5/2/01 | 3-4 ft. | 21 | 10 U | 51 |
| | | EP-129E | 5/2/01 | 4-5 ft. | 25 | 10 U | 40 |
| | | EP-129F | 5/2/01 | 10-11 ft. | 22 | 10 U | 48 |
| | | EP-129G1 | 5/2/01 | 15-16 ft. | 26 | 10 U | 50 |
| | | EP-129G2 | 5/2/01 | 15-16 ft. | 34 | 10 U | 42 |
| | | EP-129H | 5/2/01 | 20-21 ft. | 37 | 10 U | 69 |
| | | EP-129I | 5/2/01 | 25-26 ft. | 31 | 10 U | 64 |
| | | | | | | | |
| Phase II | BH11-2 | BH11-2A | 07/19/99 | 0-1 ft. | 210 | 36 | 660 |
| | | BH11-2B | 07/19/99 | 6-8 ft. | 340 | 120 | 3300 |

# Table 2-34

## Summary of Soil Sample Results for Investigation
## Area 11 (Arroyos East of I-10)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | BH11-2 | BH11-2F | 08/04/99 | 10-12 ft. | 17 | 10 U | 10 U |
| | | BH11-2G | 08/04/99 | 15-17 ft. | 10 U | 10 U | 10 U |
| | | BH11-2H | 08/04/99 | 20-22 ft. | 10 U | 10 U | 10 U |
| | | BH11-2I | 08/05/99 | 25-27 ft. | 10 U | 10 U | 10 U |
| | | BH11-2J | 08/05/99 | 30-32 ft. | 10 U | 10 U | 10 U |
| | | BH11-2K | 08/05/99 | 35-37 ft. | 10 U | 10 U | 10 U |
| | | BH11-2K2 | 08/05/99 | DUP | 10 U | 10 U | 10 U |
| | | BH11-2L | 08/05/99 | 40-42 ft. | 10 U | 10 U | 10 U |
| | BH11-3 | BH11-3F | 08/05/99 | 10-12 ft. | 55 | 17 | 1000 |
| | BH11-4 | BH11-4B | 08/05/99 | 1-2 ft. | 46 | 10 U | 17 |
| | | BH11-4C | 08/05/99 | 2-3 ft. | 33 | 10 U | 20 |
| | | BH11-4D | 08/05/99 | 3-4 ft. | 10 U | 10 U | 10 U |
| | | BH11-4E | 08/05/99 | 4-5 ft. | 19 | 10 U | 11 |
| | | BH11-4F | 08/05/99 | 10-12 ft. | 10 U | 10 U | 10 U |
| | | BH11-4G | 08/05/99 | 15-17 ft. | 10 U | 10 U | 10 U |
| | SSIA11-1 | SSIA11-1A | 07/19/99 | 0-1 ft. | 170 | 50 | 1500 |
| | | SSIA11-1B | 07/19/99 | 1-2 ft. | 33 | 16 | 520 |
| | | SSIA11-1C | 07/19/99 | 2-3 ft. | 10 U | 10 U | 290 |
| | SSIA11-2 | SSIA11-2A | 07/19/99 | 0-1 ft. | 82 | 25 | 1100 |
| | | SSIA11-2B | 07/19/99 | 1-2 ft. | 12 | 10 U | 150 |
| | SSIA11-3 | SSIA11-3A | 07/20/99 | 0-1 ft. | 2200 | 940 | 14000 |
| | | SSIA11-3C | 07/20/99 | 2-3 ft. | 1700 | 580 | 11000 |
| | | SSIA11-3D | 07/20/99 | 3-4 ft. | 1800 | 570 | 12000 |
| | | SSIA11-3E | 07/20/99 | 4-5 ft. | 430 | 140 | 4400 |
| | SSIA11-4 | SSIA11-4A | 07/20/99 | 0-1 ft. | 790 | 300 | 11000 |
| | | SSIA11-4B | 07/20/99 | 1-2 ft. | 160 | 70 | 3100 |
| | | SSIA11-4C | 07/20/99 | 2-3 ft. | 52 | 21 | 1200 |
| | | SSIA11-4D | 07/20/99 | 3-4 ft. | 25 | 20 | 1100 |
| | | SSIA11-4E | 07/20/99 | 4-5 ft. | 23 | 11 | 850 |
| | SSIA11-5 | SSIA11-5A | 07/20/99 | 0-1 ft. | 20 U | 10 U | 150 |
| | | SSIA11-5A2 | 07/20/99 | DUP | 20 U | 10 U | 150 |
| | | SSIA11-5C | 07/20/99 | 2-3 ft. | 23 | 10 U | 750 |
| | | SSIA11-5E | 07/20/99 | 4-5 ft. | 44 | 31 | 1200 |
| | SSIA11-6 | SSIA11-6A | 07/20/99 | 0-1 ft. | 480 | 120 | 2000 |
| | | SSIA11-6B | 07/20/99 | 1-2 ft. | 920 | 380 | 12000 |
| | | SSIA11-6C | 07/20/99 | 2-3 ft. | 4400 | 350 | 2100 |
| | | SSIA11-6D | 07/20/99 | 3-4 ft. | 7300 | 620 | 3100 |

## Table 2-34

## Summary of Soil Sample Results for Investigation
## Area 11 (Arroyos East of I-10)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | SSIA11-6 | SSIA11-6E | 07/20/99 | 4-5 ft. | 14000 | 1400 | 21000 |
| | SSIA11-7 | SSIA11-7A | 07/20/99 | 0-1 ft. | 2500 | 250 | 5800 |
| | | SSIA11-7A2 | 07/20/99 | DUP | 2500 | 150 | 5700 |
| | | SSIA11-7B | 07/20/99 | 1-2 ft. | 15000 | 260 | 11000 |
| | | SSIA11-7C | 07/20/99 | 2-3 ft. | 720 | 180 | 3700 |
| | | SSIA11-7D | 07/20/99 | 3-4 ft. | 750 | 170 | 3600 |
| | | SSIA11-7E | 07/20/99 | 4-5 ft. | 2800 | 240 | 6500 |
| | SSIA11-8 | SSIA11-8A | 07/21/99 | 0-1 ft. | 560 | 610 | 2900 |
| | | SSIA11-8B | 07/21/99 | 1-2 ft. | 880 | 290 | 3200 |
| | | SSIA11-8C | 07/21/99 | 2-3 ft. | 1700 | 360 | 7200 |
| | | SSIA11-8D | 07/21/99 | 3-4 ft. | 1700 | 330 | 7600 |
| | | SSIA11-8E | 07/21/99 | 4-5 ft. | 890 | 230 | 5800 |
| | SSIA11-10 | SSIA11-10A | 08/04/99 | 0-1 ft. | 160 | 12 | 730 |
| | | SSIA11-10B | 08/04/99 | 1-2 ft. | 23 | 10 U | 150 |
| | | SSIA11-10D | 08/04/99 | 3-4 ft. | 10 | 10 U | 10 U |
| | SSIA11-11 | SSIA11-11A | 08/14/99 | 0-1 ft. | 65 | 22 | 450 |
| | | SSIA11-11B | 08/14/99 | 1-2 ft. | 42 | 10 U | 180 |
| | | SSIA11-11C | 08/14/99 | 2-3 ft. | 17 | 10 U | 11 |
| | | SSIA11-11D | 08/14/99 | 3-4 ft. | 10 U | 10 U | 10 U |
| | | SSIA11-11E | 08/14/99 | 4-5 ft. | 11 | 10 U | 10 U |
| | SSIA11-14 | SSIA11-14B | 08/06/99 | 1-2 ft. | 17 | 13 | 10 U |
| | | SSIA11-14C | 08/06/99 | 2-3 ft. | 23 | 10 U | 10 U |
| | | SSIA11-14D | 08/06/99 | 3-4 ft. | 13 | 10 U | 10 U |
| | | SSIA11-14E | 08/06/99 | 4-5 ft. | 17 | 10 U | 10 U |
| | SSIA11-15 | SSIA11-15A | 08/06/99 | 0-1 ft. | 51 | 10 U | 130 |
| | | SSIA11-15B | 08/06/99 | 1-2 ft. | 30 | 10 U | 380 |
| | | SSIA11-15C | 08/06/99 | 2-3 ft. | 44 | 10 U | 950 |
| | | SSIA11-15D | 08/06/99 | 3-4 ft. | 84 | 14 | 430 |
| | | SSIA11-15E | 08/06/99 | 4-5 ft. | 13 | 10 U | 35 |
| | SSIA11-16 | SSIA11-16B | 08/06/99 | 1-2 ft. | 21 | 10 U | 34 |
| | | SSIA11-16C | 08/06/99 | 2-3 ft. | 19 | 10 U | 10 U |
| | | SSIA11-16D | 08/06/99 | 3-4 ft. | 20 | 10 U | 10 U |
| | | SSIA11-16E | 08/06/99 | 4-5 ft. | 10 U | 10 U | 10 U |
| | | SSIA11-16E2 | 08/06/99 | DUP | 10 U | 10 U | 10 U |
| | SSIA11-17 | SSIA11-17A | 11/4/99 | 0-1 ft. | 110 | 15 | 920 J4 |
| | SSIA11-18 | SSIA11-18A | 11/5/99 | 0-1 ft. | 150 | 45 | 1100 |

## Table 2-34

## Summary of Soil Sample Results for Investigation
## Area 11 (Arroyos East of I-10)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | SSIA11-18 | SSIA11-18B | 11/5/99 | 1-2 ft. | 230 | 86 | 2200 |
| | | SSIA11-18C | 11/5/99 | 2-3 ft. | 140 | 61 | 1300 |
| | | | | | | | |
| | EP-93 | EP-93A | 07/21/99 | 0-1 ft. | 27 | 10 U | 93 |
| | | EP-93B | 07/21/99 | 1-2 ft. | 33 | 10 U | 74 |
| | | EP-93C | 07/21/99 | 2-3 ft. | 27 | 10 U | 170 |
| | | EP-93D | 07/21/99 | 3-4 ft. | 770 | 210 | 5600 |
| | | EP-93E | 07/21/99 | 4-5 ft. | 7100 | 14000 | 54000 |
| | | EP-93F | 07/21/99 | 10-12 ft. | 110 | 270 | 5600 |
| | | EP-93G | 07/21/99 | 15-17 ft. | 360 | 88 | 3900 |
| | | EP-93H | 07/21/99 | 20-22 ft. | 160 | 35 | 1600 |
| | | EP-93I | 07/21/99 | 25-27 ft. | 20 U | 10 U | 38 |
| | | EP-93J | 07/21/99 | 30-32 ft. | 20 U | 10 U | 49 |
| | | EP-93J2 | 07/21/99 | 30-32 ft. | 20 U | 13 | 45 |
| | | EP-93K | 07/21/99 | 35-37 ft. | 20 U | 10 U | 42 |
| | | EP-93L | 07/21/99 | 40-42 ft. | 20 U | 10 U | 39 |
| | | EP-93L | 07/21/99 | 2-3 ft. | 27 | 10 U | 170 |
| | | EP-93M | 07/21/99 | 45-47 ft. | 10 U | 10 U | 10 U |
| | | EP-93N | 07/21/99 | 50-52 ft. | 10 U | 10 U | 10 U |
| | | | | | | | |
| | EP-94 | EP-94A | 07/26/99 | 0-1 ft. | 760 J4 | 560 | 5600 |
| | | EP-94A2 | 07/26/99 | 0-1 ft. | 1300 J4 | 700 | 8000 |
| | | EP-94B | 07/26/99 | 1-2 ft. | 990 J4 | 180 | 8000 |
| | | EP-94C | 07/26/99 | 2-3 ft. | 620 J4 | 180 | 5200 |
| | | EP-94E | 07/26/99 | 4-5 ft. | 680 J4 | 170 | 3400 |
| | | EP-94E2 | 07/26/99 | 4-5 ft. | 459 | 152 | 4368 |
| | | EP-94F | 07/26/99 | 10-12 ft. | 36 J4 | 17 | 580 |
| | | EP-94F2 | 07/26/99 | 10-12 ft. | 65 | 12 | 420 |
| | | EP-94H | 07/26/99 | 20-22 ft. | 130 J4 | 85 | 1200 |
| | | EP-94I | 07/26/99 | 25-27 ft. | 10 J4 | 10 U | 40 |
| | | EP-94J | 07/26/99 | 30-32 ft. | 10 J4 | 10 U | 10 U |
| | | EP-94K | 07/26/99 | 35-37 ft. | 27 J4 | 10 U | 40 |
| | | EP-94L | 07/26/99 | 40-42 ft. | 10 J4 | 10 U | 10 U |
| | | EP-94M | 07/26/99 | 45-47 ft. | 10 J4 | 10 U | 10 U |
| | | EP-94N | 07/26/99 | 50-52 ft. | 10 J4 | 10 U | 10 U |
| | | EP-94O | 07/26/99 | 55-57 ft. | 10 J4 | 10 U | 10 U |
| | | | | | | | |
| | EP-95 | EP-95A | 07/28/99 | 0 ft. | 10 U | 10 U | 190 |
| | | EP-95B | 07/28/99 | 1 ft. | 10 U | 10 U | 120 |
| | | EP-95C | 07/28/99 | 2 ft. | 13 | 10 U | 150 |
| | | EP-95D | 07/28/99 | 3 ft. | 10 U | 10 U | 21 |
| | | EP-95D2 | 07/28/99 | 3 ft. | 10 U | 10 U | 30 |
| | | EP-95E | 07/28/99 | 4 ft. | 10 U | 10 U | 10 U |
| | | | | | | | |

# Table 2-34

## Summary of Soil Sample Results for Investigation
## Area 11 (Arroyos East of I-10)
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | EP-95R | EP-95RA | 10/18/99 | 0-1 ft. | 26 | 10 U | 250 |
| | | EP-95RB | 10/18/99 | 1-2 ft. | 10 U | 10 U | 130 |
| | | EP-95RC | 10/18/99 | 2-3 ft. | 10 U | 10 U | 68 |
| | | EP-95RD | 10/18/99 | 3-4 ft. | 10 U | 10 U | 87 |
| | | EP-95RE | 10/18/99 | 4-5 ft. | 10 U | 10 U | 110 |
| | | EP-95RF | 10/18/99 | 10-12 ft. | 10 U | 10 U | 48 |
| | | EP-95RF2 | 10/18/99 | 10-12 ft. | 10 U | 10 U | 50 |
| | | EP-95RG | 10/18/99 | 15-17 ft. | 10 U | 10 U | 40 |
| | | EP-95RH | 10/18/99 | 20-22 ft. | 10 U | 10 U | 39 |
| | | EP-95RI | 10/18/99 | 25-27 ft. | 16 | 10 U | 39 |
| | | EP-95RJ | 10/20/99 | 30-32 ft. | 10 U | 10 U | 30 |
| | | EP-95RK | 10/20/99 | 35-37 ft. | 10 U | 10 U | 39 |
| | | | | | | | |
| | EP-96 | EP-96A | 07/20/99 | 0-1 ft. | 500 | 180 | 5100 |
| | | EP-96B | 07/20/99 | 1-2 ft. | 27 | 14 | 160 |
| | | EP-96C | 07/20/99 | 2-3 ft. | 42 | 10 U | 90 J4 |
| | | EP-96D | 07/20/99 | 3-4 ft. | 32 | 10 U | 150 |
| | | EP-96E | 07/20/99 | 4-5 ft. | 20 U | 10 U | 49 J4 |
| | | EP-96F | 07/20/99 | 10-12 ft. | 20 U | 10 U | 59 J4 |
| | | EP-96G | 07/20/99 | 15-17 ft. | 20 U | 10 U | 49 J4 |
| | | EP-96H | 07/20/99 | 20-22 ft. | 20 U | 10 U | 31 J4 |
| | | EP-96I | 07/20/99 | 25-27 ft. | 20 U | 10 U | 50 J4 |
| | | EP-96J | 07/20/99 | 30-32 ft. | 25 | 10 U | 11 J4 |
| | | EP-96J2 | 07/20/99 | 30-32 ft. | 20 U | 10 U | 41 J4 |
| | | EP-96K | 07/20/99 | 35-37 ft. | 20 U | 10 U | 49 J4 |
| | | EP-96L | 07/20/99 | 40-42 ft. | 20 U | 10 U | 54 J4 |
| | | EP-96M | 07/20/99 | 45-47 ft. | 20 U | 10 U | 46 J4 |
| | | EP-96N | 07/20/99 | 50-52 ft. | 20 U | 10 U | 49 |
| | | EP-96N2 | 07/20/99 | 50-52 ft. | 20 U | 10 U | 51 |
| | | EP-96O | 07/20/99 | 55-57 ft. | 31 | 10 U | 37 |
| | | EP-96P | 07/20/99 | 60-62 ft. | 20 U | 10 U | 27 |
| | | | | | | | |
| | EP-97 | EP-97A | 08/04/99 | 0-1 ft. | 64 | 19 | 340 |
| | | EP-97A2 | 08/04/99 | 0-1 ft. | 62 | 10 U | 380 |
| | | EP-97B | 08/04/99 | 1-2 ft. | 46 | 20 | 340 |
| | | EP-97C | 08/04/99 | 2-3 ft. | 71 | 16 | 500 |
| | | | | | | | |
| | EP-98 | EP-98A | 08/06/99 | 0-1 ft. | 41 | 12 | 250 |
| | | EP-98A2 | 08/06/99 | 0-1 ft. | 60 | 11 | 320 |
| | | EP-98B | 08/06/99 | 1-2 ft. | 10 U | 10 U | 10 U |
| | | EP-98C | 08/06/99 | 1-3 ft. | 10 U | 10 U | 10 U |
| | | EP-98D | 08/06/99 | 3-4 ft. | 10 U | 10 U | 10 U |
| | | EP-98E | 08/06/99 | 4-5 ft. | 10 U | 10 U | 10 U |
| | | EP-98F | 08/06/99 | 10-12 ft. | 10 U | 10 U | 10 U |
| | | EP-98G | 08/06/99 | 15-17 ft. | 10 U | 10 U | 10 U |

## Table 2-34

## Summary of Soil Sample Results for Investigation Area 11 (Arroyos East of I-10) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II | EP-98 | EP-98H | 08/06/99 | 20-22 ft. | 10 U | 10 U | 10 U |
| | | | | | | | |
| Phase I | EP-83 | EP-83A | 6/11/97 | 7 ft. | 20 U | 10 U | 20 |
| | | EP-83B | 6/11/97 | 15 ft. | 20 U | 10 U | 18 |
| | | EP-83C | 6/11/97 | 20 ft. | 20 U | 10 U | 21 |
| | | EP-83D | 6/11/97 | 25 ft. | 20 U | 10 U | 20 |
| | | EP-83E | 6/11/97 | 30 ft. | 20 U | 10 U | 10 U |
| | | EP-83F | 6/11/97 | 35 ft. | 20 U | 10 U | 10 U |
| | | EP-83F2 | 6/11/97 | 35 ft. | 20 U | 10 U | 10 U |
| | | EP-83G | 6/11/97 | 40 ft. | 20 U | 10 U | 10 U |
| | | EP-83H | 6/11/97 | 45 ft. | 20 U | 10 U | 27 |
| | | | | | | | |
| | EP-84 | EP-84A | 6/11/97 | 0 ft. | 20 U | 14 | 500 |
| | | EP-84B | 6/11/97 | 5 ft. | 20 U | 16 | 500 |
| | | EP-84C | 6/11/97 | 10 ft. | 20 U | 10 U | 61 |
| | | EP-84D | 6/11/97 | 15 ft. | 20 U | 10 U | 33 |
| | | | | | | | |
| | EP-87 | EP-87A | 6/16/97 | 0 ft. | 20 U | 10 U | 14 |
| | | EP-87B | 6/16/97 | 5 ft. | 20 U | 10 U | 54 |
| | | EP-87C | 6/16/97 | 10 ft. | 20 U | 10 U | 11 |
| | | | | | | | |

Notes:

All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.

U: Less than listed value (detection limit)

NA: Not applicable

All concentrations in milligrams per kilogram (mg/kg)

Depth in feet below ground surface.

BH11-1 is presented as EP-96.

Only slag at BH11-20, BH11-21, SSIA11-9, SSIA11-12 and SSIA11-13, no soil samples collected.

## Table 2-35

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-11 (Arroyo East of I-10)
## El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA11** | | | | | | | |
| **EP-83** | 1/27/00 | | 0.006 | | 0.005 U | | 0.003 U |
| | 1/27/00 | | 0.005 | | 0.005 U | | 0.003 |
| | 5/1/00 | | 0.008 | | 0.005 U | | 0.003 UJ1 |
| | 8/9/00 | | 0.005 | | 0.005 U | | 0.003 U |
| | 11/8/00 | | 0.017 | | 0.005 U | | 0.003 U |
| | 11/8/00 | | 0.016 | | 0.005 U | | 0.004 |
| | 2/14/01 | | 0.005 | | 0.005 U | | 0.003 U |
| | 5/11/01 | | 0.01 | | 0.005 U | | 0.003 U |
| | 7/24/01 | 0.014 | 0.014 | 0.005 U | 0.005 U | 0.003 U | 0.012 |
| **EP-84** | 1/27/00 | | 0.029 | | 0.007 | | 0.087 |
| | 5/1/00 | | 0.04 | | 0.005 | | 0.017 UJ1 |
| | 5/1/00 | | 0.041 | | 0.006 | | 0.02 UJ1 |
| | 8/9/00 | | 0.036 | | 0.013 | | 0.026 |
| | 8/9/00 | | 0.035 | | 0.013 | | 0.02 |
| | 11/8/00 | | 0.079 | | 0.01 | | 0.067 |
| | 2/14/01 | | 0.025 | | 0.005 | | 0.029 |
| | 5/11/01 | | 0.043 | | 0.008 | | 0.02 UJ1 |
| | 5/11/01 | | 0.041 | | 0.008 | | 0.019 UJ1 |
| | 7/24/01 | 0.026 | 0.027 | 0.005 U | 0.005 U | 0.013 | 0.019 |
| **EP-93** | 1/27/00 | | 0.031 | | 0.005 U | | 0.033 |
| | 5/1/00 | | 0.017 | | 0.005 U | | 0.006 UJ1 |
| | 8/9/00 | | 0.01 | | 0.005 U | | 0.009 |
| | 11/8/00 | | 0.022 | | 0.005 U | | 0.006 |
| | 2/14/01 | | 0.015 | | 0.005 U | | 0.005 |
| | 5/11/01 | | 0.019 | | 0.005 U | | 0.005 UJ1 |
| | 7/24/01 | 0.033 | 0.03 | 0.005 U | 0.005 U | 0.003 U | 0.012 |
| **EP-94** | 1/27/00 | | 0.014 | | 0.005 U | | 0.007 |
| | 5/1/00 | | 0.014 | | 0.005 U | | 0.026 |
| | 8/9/00 | | 0.009 | | 0.005 U | | 0.003 U |
| | 11/8/00 | | 0.015 | | 0.005 U | | 0.003 |
| | 2/14/01 | | 0.013 | | 0.005 U | | 0.003 U |
| | 5/11/01 | | 0.016 | | 0.005 U | | 0.005 |
| | 7/24/01 | 0.015 | 0.015 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| **EP-95** | 1/27/00 | | 0.009 | | 0.005 U | | 0.003 U |
| | 5/1/00 | | 0.014 | | 0.005 U | | 0.003 U |
| | 8/9/00 | | 0.011 | | 0.005 U | | 0.003 U |
| | 11/8/00 | | 0.015 | | 0.005 U | | 0.003 U |
| | 2/14/01 | | 0.015 | | 0.005 U | | 0.003 U |
| | 5/11/01 | | 0.013 | | 0.005 U | | 0.003 U |
| | 7/24/01 | 0.017 | 0.017 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| | 7/24/01 | 0.017 | 0.018 | 0.005 U | 0.005 U | 0.003 U | 0.004 |
| **EP-96** | 1/27/00 | | 0.007 | | 0.005 U | | 0.01 |
| | 5/1/00 | | 0.012 | | 0.005 U | | 0.014 UJ1 |
| | 8/9/00 | | 0.008 | | 0.005 U | | 0.007 |

# Table 2-35

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-11 (Arroyo East of I-10) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| EP-96 | 11/8/00 | | 0.019 | | 0.005 U | | 0.005 |
| | 2/14/01 | | 0.014 | | 0.005 U | | 0.003 U |
| | 5/11/01 | | 0.023 | | 0.005 U | | 0.006 UJ1 |
| | 7/24/01 | 0.044 | 0.039 | 0.005 U | 0.005 U | 0.003 U | 0.007 |
| EP-97 | 1/27/00 | | 0.14 | | 0.013 | | 0.13 |
| | 5/1/00 | | 0.11 | | 0.008 | | 0.054 |
| | 8/9/00 | | 0.15 | | 0.009 | | 0.024 |
| | 11/8/00 | | 0.16 | | 0.008 | | 0.15 |
| | 2/14/01 | | 0.12 | | 0.012 | | 0.18 |
| | 5/14/01 | | 0.2 | | 0.023 | | 0.69 |
| | 7/24/01 | 0.14 | 0.15 | 0.011 | 0.012 | 0.017 | 0.035 |
| EP-98 | 1/27/00 | | 0.027 | | 0.005 U | | 0.027 |
| | 5/1/00 | | 0.037 | | 0.005 U | | 0.003 UJ1 |
| | 8/9/00 | | 0.021 | | 0.005 U | | 0.004 |
| | 11/8/00 | | 0.027 | | 0.005 U | | 0.003 U |
| | 2/14/01 | | 0.022 | | 0.005 U | | 0.006 |
| | 5/14/01 | | 0.031 | | 0.005 U | | 0.01 |
| | 5/14/01 | | 0.032 | | 0.005 U | | 0.008 |
| | 7/24/01 | 0.037 | 0.037 | 0.005 U | 0.005 U | 0.003 U | 0.006 |
| EP-129 | 5/11/01 | | 0.011 | | 0.005 U | | 0.007 UJ1 |
| | 7/24/01 | 0.007 | 0.008 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met
J2 calibration range exceeded or significant deviation from known values. Possible bias.
J3 Holding time not met. Indicates low bias.
J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.
UJ1 Blank contamination. Indicates possible high bias and/or false positive.
UJ2 Calibration range exceeded or significant deviation from known value.
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusuable (compound may or may not be present). Resampling and/ or reanalysis is necessary for verification.
A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals
T Total Metals

# Table 2-36

## Summary of Soil Sample Results for Investigation Area 12 (Ephemeral Pond and Pond Sediment Storage Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III | BH12-10 | BH12-10A | 4/3/01 | 52-23 ft. | 12 | 13 | 78 |
| | BH12-11 | BH12-11A | 4/3/01 | 37-38 ft. | 57 | 10 U | 41 |
| | | BH12-11B2 | 4/3/01 | 42-43 ft. | 43 | 10 U | 48 |
| | BH12-12 | BH12-12A | 4/3/01 | 47-48 ft. | 50 | 13 | 200 |
| | | BH12-12B | 4/3/01 | 52-53 ft. | 19 | 11 | 55 |
| | BH12-13 | BH12-13A | 4/4/01 | 46-47 ft. | 20 | 12 | 43 |
| | | BH12-13B | 4/4/01 | 51-52 ft. | 41 | 13 | 140 |
| | BH12-14 | BH12-14A | 4/4/01 | 43-44 ft. | 27 | 10 U | 70 |
| | | BH12-14B | 4/4/01 | 50-51 ft. | 37 | 10 U | 77 |
| | BH12-15 | BH12-15A | 4/4/01 | 49-50 ft. | 520 | 2800 | 1500 |
| | | BH12-15A | 4/4/01 | 49-50 ft. | 616 | 1945 | 1487 |
| | | BH12-15B | 4/4/01 | 51-52 ft. | 73 | 11 | 230 |
| | BH12-16 | BH12-16A | 4/4/01 | 48-49 ft. | 49 | 10 U | 100 |
| | | BH12-16B | 4/4/01 | 53-54 ft. | 30 | 10 U | 65 |
| | BH12-17 | BH12-17A | 4/5/01 | 48-49 ft. | 260 | 72 | 1100 |
| | | BH12-17B | 4/5/01 | 51-52 ft. | 87 | 17 | 510 |
| | | BH12-17C | 4/5/01 | 55-56 ft. | 39 | 10 U | 230 |
| | BH12-18 | BH12-18A | 4/5/01 | 43-44 ft. | 47 | 11 | 51 |
| | | BH12-18B | 4/5/01 | 48-49 ft. | 47 | 10 U | 60 |
| | BH12-19 | BH12-19A | 4/5/01 | 40-41 ft. | 59 | 10 U | 54 |
| | | BH12-19B | 4/5/01 | 45-46 ft. | 34 | 10 U | 64 |
| | BH12-20 | BH12-20A | 4/5/01 | 31-32 ft. | 24 | 11 | 37 |
| | | BH12-20B | 4/5/01 | 36-37 ft. | 29 | 10 | 45 |
| | BH12-21 | BH12-21A | 4/5/01 | 20-21 ft. | 85 | 14 | 51 |
| | | BH12-21B | 4/5/01 | 25-26 ft. | 39 | 12 | 59 |
| | BH12-22 | BH12-22A | 4/6/01 | 25-26 ft. | 88 | 10 U | 42 |
| | | BH12-22B | 4/6/01 | 31-32 ft. | 40 | 10 U | 55 |
| | BH12-23 | BH12-23A | 7/17/01 | 0-1 ft. | 2700 | 2700 | 24000 |
| | | BH12-23B | 7/17/01 | 1-2 ft. | 2200 | 2600 | 19000 |
| | | BH12-23D | 7/17/01 | 3-4 ft. | 1800 | 2200 | 17000 |
| | | BH12-23E | 7/17/01 | 4-5 ft. | 1100 | 780 | 9300 |
| | | BH12-23F1 | 7/17/01 | 7-8 ft. | 23 | 10 U | 78 |
| | | BH12-23F2 | 7/17/01 | 7-8 ft. | 21 | 10 U | 63 |
| | | BH12-23G | 7/17/01 | 10-11 ft. | 29 | 10 U | 68 |
| | | BH12-23H | 7/17/01 | 12-13 ft. | 27 | 10 U | 96 |

# Table 2-36

## Summary of Soil Sample Results for Investigation Area 12 (Ephemeral Pond and Pond Sediment Storage Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III cont. | BH12-23 | BH12-23I | 7/17/01 | 15-16 ft. | 36 | 19 | 140 |
| | | | | | | | |
| | BH12-24 | BH12-24A | 7/17/01 | 0-1 ft. | 3200 | 3200 | 28000 |
| | | BH12-24B | 7/17/01 | 1-2 ft. | 730 | 450 | 1100 |
| | | BH12-24C | 7/17/01 | 2-3 ft. | 2400 | 1500 | 19000 |
| | | BH12-24E | 7/17/01 | 4-5 ft. | 88 | 41 | 560 |
| | | BH12-24F1 | 7/17/01 | 7-8 ft. | 35 | 10 U | 230 |
| | | BH12-24F2(D) | 7/17/01 | 7-8 ft. | 40 | 14 | 76 |
| | | BH12-24G | 7/17/01 | 10-11 ft. | 22 | 11 | 71 |
| | | BH12-24H | 7/17/01 | 12-13 ft. | 33 | 10 U | 120 |
| | | BH12-24I | 7/17/01 | 15-16 ft. | 25 | 12 | 78 |
| | | | | | | | |
| | BH12-25 | BH12-25A | 7/17/01 | 0-1 ft. | 190 | 280 | 1100 |
| | | BH12-25B | 7/17/01 | 1-2 ft. | 89 | 31 | 180 |
| | | BH12-25C | 7/17/01 | 2-3 ft. | 23 | 19 | 77 |
| | | BH12-25D | 7/17/01 | 4-5 ft. | 24 | 10 U | 81 |
| | | BH12-25E1 | 7/17/01 | 5-6 ft. | 21 | 10 U | 85 |
| | | BH12-25F | 7/17/01 | 7-8 ft. | 36 | 10 U | 51 |
| | | BH12-25H | 7/17/01 | 12-13 ft. | 19 | 11 | 88 |
| | | BH12-25I | 7/17/01 | 15-16 ft. | 18 | 10 U | 77 |
| | | | | | | | |
| | BH12-26 | BH12-26A | 7/17/01 | 4-5 ft. | 25 | 10 U | 130 |
| | | BH12-26B | 7/17/01 | 7-8 ft. | 44 | 10 U | 150 |
| | | BH12-26C1 | 7/17/01 | 10-11 ft. | 13 | 10 U | 66 |
| | | BH12-26C2 | 7/17/01 | 10-11 ft. | 29 | 11 | 44 |
| | | BH12-26D | 7/17/01 | 12-13 ft. | 26 | 14 | 92 |
| | | | | | | | |
| | BH12-27 | BH12-27A | 7/17/01 | 0-1 ft. | 2200 | 2200 | 20000 |
| | | BH12-27B | 7/17/01 | 1-2 ft. | 210 | 30 | 1400 |
| | | BH12-27C | 7/17/01 | 2-3 ft. | 330 | 270 | 3500 |
| | | BH12-27D | 7/17/01 | 4-5 ft. | 16 | 20 | 170 |
| | | BH12-27E | 7/17/01 | 7-8 ft. | 34 | 10 U | 180 |
| | | | | | | | |
| | BH12-28 | BH12-28A | 7/18/01 | 15-16 ft. | 36 | 24 | 190 |
| | | | | | | | |
| | BH12-29 | BH12-29A1 | 7/18/01 | 4-5 ft. | 24 | 10 | 87 |
| | | BH12-29A2 | 7/18/01 | 4-5 ft. | 32 | 10 U | 81 |
| | | BH12-29B | 7/18/01 | 7-8 ft. | 44 | 16 | 64 |
| | | BH12-29C | 7/18/01 | 10-11 ft. | 25 | 12 | 43 |
| | | BH12-29D | 7/18/01 | 12-13 ft. | 34 | 10 U | 80 |
| | | | | | | | |
| | BH12-30 | BH12-30A | 7/18/01 | 10-11 ft. | 31 | 10 U | 47 |
| | | BH12-30B | 7/18/01 | 12-13 ft | 22 | 10 U | 41 |
| | | BH12-30C | 7/18/01 | 15-16 ft. | 22 | 10 U | 59 |
| | | BH12-30D | 7/18/01 | 17-18 ft. | 23 | 12 | 53 |
| | | | | | | | |
| | BH12-31 | BH12-31A | 7/18/01 | 7-8 ft. | 35 | 10 | 91 |

## Table 2-36

## Summary of Soil Sample Results for Investigation Area 12 (Ephemeral Pond and Pond Sediment Storage Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III cont. | BH12-31 | BH12-31B | 7/18/01 | 10-11 ft. | 27 | 13 | 52 |
| | | BH12-31C | 7/18/01 | 12-13 ft. | 33 | 10 U | 26 |
| | | BH12-31D | 7/18/01 | 15-16 ft. | 32 | 10 U | 47 |
| | | | | | | | |
| | BH12-32 | BH12-32A1 | 7/18/01 | 7-8 ft. | 120 | 26 | 670 |
| | | BH12-32B | 7/18/01 | 12-13 ft. | 34 | 10 U | 110 |
| | | BH12-32C | 7/18/01 | 15-16 ft. | 44 | 10 U | 150 |
| | | | | | | | |
| | BH12-33 | BH12-33A | 7/18/01 | 12-13 ft. | 15 | 10 U | 91 |
| | | | | | | | |
| | BH12-34 | BH12-34A1 | 718/01 | 4-5 ft. | 49 | 39 | 510 |
| | | BH12-34A2(D | 718/01 | 4-5 ft. | 430 | 470 | 5700 |
| | | BH12-34B | 718/01 | 7-8 ft. | 160 | 58 | 1300 |
| | | BH12-34C | 718/01 | 10-11 ft. | 73 | 14 | 170 |
| | | BH12-34D | 718/01 | 12-13 ft. | 250 | 180 | 2500 |
| | | BH12-34E | 718/01 | 15-16 ft. | 140 | 100 | 1600 |
| | | | | | | | |
| | BH12-35 | BH12-35A1 | 718/01 | 7-8 ft. | 110 | 35 | 930 |
| | | BH12-35A2 | 718/01 | 7-8 ft. | 70 | 18 | 690 |
| | | BH12-35B | 718/01 | 10-11 ft. | 74 | 21 | 530 |
| | | BH12-35C | 718/01 | 12-13 ft. | 29 | 10 U | 51 |
| | | BH12-35D | 718/01 | 15-16 ft. | 68 | 24 | 460 |
| | | BH12-35E | 718/01 | 17-18 ft. | 63 | 25 | 480 |
| | | | | | | | |
| | BH12-36 | BH12-36A1 | 7/18/01 | 10-11 ft. | 700 | 540 | 6100 |
| | | BH12-36A2 | 7/18/01 | 10-11 ft. | 1300 | 1400 | 13000 |
| | | BH12-36B | 7/18/01 | 12-13 ft. | 100 | 83 | 1200 |
| | | | | | | | |
| | | | | | | | |
| | BH12-37 | BH12-37A | 7/19/01 | 7-8 ft. | 190 | 19 | 1100 |
| | | BH12-37B | 7/19/01 | 10-11 ft. | 120 | 13 | 670 |
| | | BH12-37C | 7/19/01 | 15-16 ft. | 19 | 10 U | 41 |
| | | BH12-37D | 7/19/01 | 18-19 ft. | 33 | 12 | 32 |
| | | | | | | | |
| | BH12-38 | BH12-38A | 7/19/01 | 5-6 ft. | 27 | 10 U | 59 |
| | | | | | | | |
| | EP-120 | EP-120A | 4/6/01 | 5-6 ft. | 77 | 10 U | 150 |
| | | EP-120B | 4/6/01 | 10-11 ft. | 60 | 11 | 220 |
| | | EP-120C | 4/6/01 | 15-16 ft. | 23 | 10 U | 120 |
| | | | | | | | |
| | EP-121 | EP-121A | 4/10/01 | 10-11 ft. | 51 | 17 | 180 |
| | | | | | | | |
| | EP-123 | EP-123A | 4/12/01 | 21-22 ft. | 800 | 33 | 1400 |
| | | EP-123B | 4/12/01 | 23-24 ft. | 77 | 13 | 170 |

# Table 2-36

## Summary of Soil Sample Results for Investigation Area 12 (Ephemeral Pond and Pond Sediment Storage Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III cont. | EP-123 | EP-123C1 | 4/12/01 | 25-26 ft. | 21 | 10 U | 71 |
| | | EP-123C2 | 4/12/01 | 25-26 ft. | 22 | 10 U | 130 |
| | | EP-123D | 4/12/01 | 30-31 ft. | 29 | 13 | 59 |
| | | EP-123E | 4/12/01 | 35-36 ft. | 10 U | 10 U | 48 |
| | | EP-123F | 4/12/01 | 40-41 ft. | 23 | 10 U | 78 |
| Phase II | BH12-1 | BH12-1A | 11/3/99 | 0-1 ft. | 490 | 300 | 2700 |
| | | BH12-1B | 11/3/99 | 3-4 ft. | 10 U | 10 U | 140 |
| | | BH12-1C | 11/3/99 | 4-5 ft. | 10 U | 10 U | 150 |
| | | BH12-1D | 11/3/99 | 10-12 ft. | 10 U | 10 U | 10 U |
| | | BH12-1E | 11/3/99 | 15-16 ft. | 10 U | 10 U | 10 U |
| | | BH12-1E2 | 11/3/99 | 15-16 ft. | 10 U | 10 U | 10 U |
| | BH12-2 | BH12-2A | 11/3/99 | 6-7 ft. | 10 U | 10 U | 130 |
| | | BH12-2B | 11/3/99 | 10-12 ft. | 67 | 10 | 610 |
| | BH12-3 | BH12-3A | 11/3/99 | 6-7 ft. | 10 | 10 U | 170 |
| | | BH12-3B | 11/3/99 | 10-12 ft. | 10 U | 10 U | 10 U |
| | | BH12-3C | 11/3/99 | 15-17 ft. | 10 U | 10 U | 10 U |
| | BH12-4 | BH12-4A | 11/3/99 | 0-1 ft. | 3100 | 3100 | 22000 |
| | | BH12-4B | 11/3/99 | 1-2 ft. | 3400 | 3400 | 23000 |
| | | BH12-4C | 11/3/99 | 2-3 ft. | 1200 | 1700 | 14000 |
| | | BH12-4D | 11/3/99 | 3-4 ft. | 10 U | 10 U | 110 J4 |
| | | BH12-4D2 | 11/3/99 | 10-12 ft. | 15 | 10 U | 20 J4 |
| | | BH12-4E | 11/3/99 | 15-17 ft. | 10 U | 10 U | 10 J4 |
| | BH12-5 | BH12-5A | 11/4/99 | 8-10 ft. | 10 U | 15 | 10 U |
| | BH12-6 | BH12-6A | 11/4/99 | 12-13 ft. | 120 | 10 U | 21 |
| | BH12-7 | BH12-7A | 11/4/99 | 6-8 ft. | 10 U | 10 U | 33 |
| | | BH12-7B | 11/4/99 | 10-12 ft. | 33 | 38 | 52 |
| | | BH12-7B2 | 11/4/99 | 10-12 ft. | 33 | 51 | 41 |
| | BH12-8 | BH12-8A | 11/4/99 | 2-3 ft. | 23 | 10 U | 130 |
| | | BH12-8B | 11/4/99 | 3-4 ft. | 10 U | 10 U | 120 |
| | | BH12-8C | 11/4/99 | 4-5 ft. | 25 | 10 U | 130 |
| | BH12-9 | BH12-9A | 11/4/99 | 4-5 ft. | 52 | 10 U | 10 U |
| | | BH12-9A2 | 11/4/99 | 4-5 ft. | 59 | 10 U | 10 U |
| | | BH12-9B | 11/4/99 | 8-9 ft. | 76 | 10 U | 10 U |
| | EP-108 | EP-108A | 10/14/99 | 10-12 ft. | 19 | 10 U | 41 |

# Table 2-36

## Summary of Soil Sample Results for Investigation Area 12 (Ephemeral Pond and Pond Sediment Storage Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II | EP-108 | EP-108B | 10/14/99 | 15-16 ft. | 82 | 10 U | 67 |
| | | | | | | | |
| | EP-109 | EP-109XA | 7/28/99 | 5-5.5 ft. | 380 | 50 | 2900 |
| | | EP-109XB | 7/28/99 | 10-11.5 ft. | 180 | 18 | 660 |
| | | EP-109A | 10/15/99 | 0-1 ft. | 380 | 59 | 2000 |
| | | EP-109B | 10/15/99 | 1-2 ft. | 320 | 36 | 1900 |
| | | EP-109C | 10/15/99 | 2-3 ft. | 440 | 25 | 3600 |
| | | EP-109D | 10/15/99 | 3-4 ft. | 680 | 30 | 5000 |
| | | EP-109E | 10/15/99 | 4-5 ft. | 460 | 32 | 4000 |
| | | EP-109F | 10/15/99 | 10-12 ft. | 14 | 10 U | 310 |
| | | EP-109G | 10/15/99 | 15-17 ft. | 10 U | 10 U | 33 |
| | | EP-109H | 10/15/99 | 20-22 ft. | 10 U | 10 U | 43 |
| | | EP-109H2 | 10/15/99 | 20-22 ft. | 10 U | 10 U | 38 |
| | | | | | | | |
| Phase I | RIBH1 | RIBH-1A | 6/19/97 | 40 ft. | 4400 | 2100 | 11000 |
| | | RIBH-1B | 6/19/97 | 45 ft. | 1400 | 660 | 2200 |
| | | RIBH-1C | 6/19/97 | 50 ft. | 20 U | 11 | 36 |
| | | RIBH-1D | 6/19/97 | 55 ft. | 20 U | 10 U | 67 |
| | | RIBH-1E | 6/19/97 | 60 ft. | 23 | 10 U | 20 |
| | | RIBH-1E2 | 6/19/97 | 60 ft. | 20 U | 10 U | 24 |
| | | RIBH-1F | 6/19/97 | 62 ft. | 20 U | 10 U | 320 |
| | | | | | | | |
| | EP-78 | EP-78A | 6/4/97 | 23 ft. | 990 | 46 | 530 |
| | | EP-78B | 6/4/97 | 25 ft. | 87 | 10 U | 33 |
| | | EP-78C | 6/4/97 | 30 ft. | 82 | 10 U | 34 |
| | | EP-78D | 6/4/97 | 40 ft. | 50 | 10 U | 46 |
| | | | | | | | |
| | EP-79 | EP-79A | 6/5/97 | 10 ft. | 20 U | 10 U | 17 |
| | | EP-79B | 6/5/97 | 15 ft. | 32 | 10 U | 30 |
| | | EP-79C | 6/5/97 | 20 ft. | 28 | 10 U | 110 |
| | | EP-79D | 6/5/97 | 25 ft. | 210 | 10 U | 240 |
| | | EP-79E | 6/5/97 | 35 ft. | 20 U | 10 U | 10 U |
| | | EP-79F | 6/5/97 | 40 ft. | 20 U | 10 U | 12 |
| | | EP-79G | 6/5/97 | 45 ft. | 20 U | 10 U | 10 |
| | | | | | | | |
| | EP-82 | EP-82A | 6/10/97 | 0 ft. | 20 U | 10 U | 60 |
| | | EP-82B | 6/10/97 | 5 ft. | 20 U | 10 U | 23 |
| | | EP-82C | 6/10/97 | 10 ft. | 20 U | 10 U | 10 U |
| | | EP-82D | 6/10/97 | 15 ft. | 20 U | 10 U | 10 U |
| | | EP-82E | 6/10/97 | 20 ft. | 20 U | 10 U | 14 |
| | | EP-82F | 6/10/97 | 25 ft. | 20 U | 10 U | 15 |
| | | EP-82G | 6/10/97 | 30 ft. | 20 U | 10 U | 10 U |
| | | | | | | | |
| | EP-86 | EP-86A | 6/13/97 | 0 ft. | 20 U | 10 U | 87 |

## Table 2-36

## Summary of Soil Sample Results for Investigation Area 12 (Ephemeral Pond and Pond Sediment Storage Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I | EP-86 | EP-86B | 6/13/97 | 5 ft. | 20 U | 10 U | 33 |
| | | EP-86C | 6/13/97 | 10 ft. | 20 U | 10 U | 16 |
| | | EP-86D | 6/13/97 | 15 ft. | 20 U | 10 U | 48 |
| | | EP-86E | 6/13/97 | 20 ft. | 20 U | 10 U | 39 |
| | | EP-86F | 6/13/97 | 25 ft. | 20 U | 10 U | 26 |
| | | EP-86G | 6/13/97 | 30 ft. | 20 U | 10 U | 25 |
| | | EP-86H | 6/13/97 | 35 ft. | 20 U | 10 U | 14 |
| | | EP-86I | 6/13/97 | 40 ft. | 20 U | 10 U | 16 |
| | | EP-86J | 6/13/97 | 45 ft. | 20 U | 10 U | 17 |
| | | EP-86K | 6/13/97 | 50 ft. | 20 U | 10 U | 14 |
| | | EP-86L | 6/13/97 | 55 ft. | 20 U | 10 U | 10 U |
| | | EP-86M | 6/13/97 | 60 ft. | 20 U | 10 U | 10 U |

Notes:

All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.

U: Less than listed value (detection limit)

NA: Not applicable

All concentrations in milligrams per kilogram (mg/kg)

Depth in feet below ground surface.

# Table 2-37

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-12 (Ephemeral Pond and Pond Sediment Storage Area) El Paso Asarco Smelter, Remedial Investigation

| IA12 | | | | | | | |
|---|---|---|---|---|---|---|---|
| EP-78 | 1/28/00 | | 4.8 | | 0.005 U | | 0.009 |
| | 5/2/00 | | 4 | | 0.005 U | | 0.004 |
| | 8/9/00 | | 3.5 | | 0.005 U | | 0.006 |
| | 11/9/00 | | 3.8 | | 0.005 U | | 0.013 |
| | 2/15/01 | | 3.7 | | 0.005 U | | 0.003 U |
| | 5/14/01 | | 3.9 | | 0.005 U | | 0.012 |
| | 7/25/01 | 3.4 | 3.5 | 0.005 U | 0.005 U | 0.003 U | 0.007 |
| EP-79 | 1/28/00 | | 0.006 | | 0.005 U | | 0.004 |
| | 1/28/00 | | 0.006 | | 0.005 U | | 0.006 |
| | 5/2/00 | | 0.008 UJ1 | | 0.005 U | | 0.003 U |
| | 8/9/00 | | 0.007 | | 0.005 U | | 0.003 U |
| | 11/9/00 | | 0.014 | | 0.005 U | | 0.003 |
| | 2/15/01 | | 0.01 | | 0.005 U | | 0.003 U |
| | 5/14/01 | | 0.008 | | 0.005 U | | 0.003 U |
| | 7/25/01 | 0.02 | 0.024 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-108 | 1/28/00 | | 1.4 | | 0.005 U | | 0.006 |
| | 5/2/00 | | 1.2 | | 0.005 U | | 0.006 |
| | 8/9/00 | | 1.3 | | 0.005 U | | 0.005 |
| | 11/9/00 | | 1.2 | | 0.005 U | | 0.003 U |
| | 2/15/01 | | 1.1 | | 0.005 U | | 0.004 |
| | 5/14/01 | | 1.1 | | 0.005 U | | 0.007 |
| | 7/25/01 | 1.2 | 1.2 | 0.005 U | 0.005 U | 0.003 U | 0.003 |
| EP-109 | 1/28/00 | | 0.014 | | 0.005 U | | 0.039 |
| | 5/2/00 | | 0.016 UJ1 | | 0.005 U | | 0.006 |
| | 8/9/00 | | 0.011 | | 0.005 U | | 0.003 U |
| | 11/9/00 | | 0.019 | | 0.005 U | | 0.003 U |
| | 2/15/01 | | 0.014 | | 0.005 U | | 0.005 |
| | 5/14/01 | | 0.013 | | 0.005 U | | 0.003 U |
| | 7/25/01 | 0.033 | 0.026 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-120 | 5/7/01 | | 0.27 | | 0.005 U | | 0.003 U |
| | 8/1/01 | 0.35 | 0.35 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| | 8/1/01 | 0.35 | 0.36 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-121 | 5/7/01 | | 0.59 | | 0.005 U | | 0.01 |
| | 8/1/01 | 0.57 | 0.6 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| EP-123 | 5/8/01 | | 1.5 | | 0.005 U | | 0.005 |
| | 7/25/01 | 1.7 | 1.7 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met

J2 calibration range exceeded or significant deviation from known values. Possible bias.

J3 Holding time not met. Indicates low bias.

J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.

# Table 2-37

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-12 (Ephemeral Pond and Pond Sediment Storage Area) El Paso Asarco Smelter, Remedial Investigation

UJ1 Blank contamination. Indicates possible high bias and/or false positive.
UJ2 Calibration range exceeded or significant deviation from known value.
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusuable (compound may or may not be present). Resampling and/ or reanalysis is necessary for verification.
A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals
T Total Metals

# Table 2-38

## Summary of Soil Sample Results for Investigation Area 13 (Sample Mill Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III | BH13-2 | BH13-2A | 7/20/01 | 15-16 ft. | 470 | 92 | 5100 |
| | BH13-3 | BH13-3A | 7/21/01 | 20-21 ft. | 22 | 35 | 74 |
| | BH13-4 | BH13-4A | 7/23/01 | 22-23 ft. | 86 | 230 | 320 |
| | BH13-9 | BH13-9A | 7/23/01 | 10-11 ft. | 97 | 210 | 250 |
| | BH13-10 | BH13-10A | 7/23/01 | 15-16 ft. | 140 | 260 | 190 |
| | BH13-11 | BH13-11A1 | 7/23/01 | 25-26 ft. | 26 | 47 | 1500 |
| | BH13-13 | BH13-13A1 | 7/23/01 | 15-16 ft. | 880 | 140 | 13000 |
| | | BH13-13A2 | 7/23/01 | 15-16 ft. | 1100 | 330 | 11000 |
| Phase II | BH13-1 | BH13-1A | 10/21/99 | 0-1 ft. | 67 | 46 | 860 |
| | | BH13-1C | 10/21/99 | 19-21 ft. | 45 | 3100 | 10 U |
| | | BH13-1D | 10/21/99 | 25-27 ft. | 65 | 22 | 10 U |
| | | BH13-1E | 10/21/99 | 30-32 ft. | 76 | 10 U | 10 U |
| | | BH13-1E2 | 10/21/99 | 30-32 ft. | 65 | 10 U | 10 U |
| | | BH13-1F | 10/21/99 | 35-37 ft. | 39 | 10 U | 10 U |
| | | BH13-1G | 10/21/99 | 40-42 ft. | 54 | 10 U | 10 U |
| | | BH13-1H | 10/21/99 | 45-47 ft. | 80 | 10 U | 12 |
| | | BH13-1I | 10/21/99 | 50-52 ft. | 69 | 10 U | 10 U |
| | | BH13-1J | 10/21/99 | 55-57 ft. | 1000 | 17 | 10 U |
| | | BH13-1K | 10/29/99 | 60-62 ft. | 87 | 10 U | 20 |
| | EP-101 | EP-101A | 9/29/99 | 0-1 ft. | 940 | 690 | 11000 |
| | | EP-101B | 9/29/99 | 1-2 ft. | 7700 | 2100 | 42000 |
| | | EP-101C | 9/29/99 | 3-4 ft. | 5200 | 1300 | 21000 |
| | | EP-101C | 9/29/99 | 3-4 ft. | 3350 | 1000 | 21800 |
| | | EP-101D | 9/29/99 | 4-5 ft. | 1100 | 8000 | 12000 |
| | | EP-101E | 9/29/99 | 15-17 ft. | 16 | 560 | 140 |
| | | EP-101F | 9/29/99 | 20-22 ft. | 23 | 190 | 69 |
| | | EP-101G | 9/29/99 | 25-27 ft. | 84 | 670 | 87 |
| | | EP-101H | 9/29/99 | 30-32 ft. | 71 | 10 U | 54 |
| | | EP-101H2 | 9/29/99 | 30-32 ft. | 64 | 10 U | 54 |
| | | EP-101I | 9/29/99 | 35-37 ft. | 65 | 10 U | 45 |
| | | EP-101J | 9/29/99 | 40-42 ft. | 34 | 10 U | 60 |
| | | EP-101K | 9/29/99 | 45-47 ft. | 33 | 10 U | 53 |
| | | EP-101L | 9/29/99 | 50-52 ft. | 190 | 10 U | 19 |
| | | EP-101L2 | 9/29/99 | 50-52 ft. | 160 | 10 U | 23 |
| | | EP-101M | 9/29/99 | 55-57 ft. | 91 | 10 U | 57 |
| | EP-102 | EP-102A | 9/30/99 | 0-1 ft. | 4100 | 3500 | 27000 |

## Table 2-38

## Summary of Soil Sample Results for Investigation Area 13 (Sample Mill Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | EP-102 cont. | EP-102B | 9/30/99 | 1-2 ft. | 6300 | 7100 | 34000 |
| | | EP-102C | 9/30/99 | 2-3 ft. | 7700 | 6000 | 41000 |
| | | EP-102D | 9/30/99 | 3-4 ft. | 8000 | 3900 | 40000 |
| | | EP-102E | 9/30/99 | 4-5 ft. | 950 | 11000 | 8700 |
| | | EP-102F | 9/30/99 | 10-12 ft. | 130 | 2100 | 200 |
| | | EP-102G | 9/30/99 | 15-17 ft. | 48 | 940 | 130 |
| | | EP-102G2 | 9/30/99 | 15-17 ft. | 34 | 720 | 88 |
| | | EP-102G2 | 9/30/99 | 15-17 ft. | 18 | 614 | 20 |
| | | EP-102H | 9/30/99 | 20-22 ft. | 56 | 1500 | 57 |
| | | EP-102I | 9/30/99 | 25-27 ft. | 52 | 190 | 63 |
| | | EP-102J | 9/30/99 | 30-32 ft. | 50 | 340 | 54 |
| | | EP-102K | 9/30/99 | 35-37 ft. | 36 | 28 | 77 |
| | | EP-102L | 9/30/99 | 40-42 ft. | 31 | 14 | 57 |
| | | EP-102M | 9/30/99 | 45-47 ft. | 38 | 15 | 61 |
| | | EP-102N | 9/30/99 | 50-52 ft. | 27 | 10 U | 57 |
| | | EP-102N2 | 9/30/99 | 50-52 ft. | 35 | 10 | 43 |
| | | EP-102O | 9/30/99 | 55-57 ft. | 35 | 10 U | 50 |
| | | EP-102P | 10/4/99 | 60-62 ft. | Insufficient sample for analysis. | | |
| | | EP-102Q | 10/4/99 | 70-72 ft. | 10 U | 10 U | 34 |

Notes:

All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.

U: Less than listed value (detection limit)

NA: Not applicable

All concentrations in milligrams per kilogram (mg/kg)

Depth in feet below ground surface.

BH13-5 to BH13-8 and BH13-12 no samples/auger refusal

## Table 2-39

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-13 (Sample Mill Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA13** | | | | | | | |
| **EP-13** | 1/25/00 | | 34 | | 0.53 | | 0.025 UJ1 |
| | 4/26/00 | | 32 | | 0.57 | | 0.008 |
| | 8/4/00 | | 17 | | 0.36 | | 0.017 |
| | 11/2/00 | | 29 | | 0.56 | | 0.009 |
| | 2/9/01 | | 1.6 | | 0.005 U | | 0.004 |
| | 5/8/01 | | 25 | | 0.54 | | 0.006 |
| | 7/18/01 | 30 | 28 | 0.47 | 0.52 | 0.003 U | 0.006 UJ1 |
| **EP-14** | 11/5/97 | 1.1 | | 0.005 U | | 0.003 U | |
| | 1/25/00 | | 1.5 | | 0.005 U | | 0.01 UJ1 |
| | 4/26/00 | | 1.3 | | 0.005 U | | 0.005 |
| | 8/4/00 | | 1.3 | | 0.005 U | | 0.004 |
| | 8/4/00 | | 1.3 | | 0.005 U | | 0.004 |
| | 11/2/00 | | 1.4 | | 0.005 U | | 0.004 |
| | 2/9/01 | | 23 | | 0.52 | | 0.013 |
| | 5/8/01 | | 1.4 | | 0.005 U | | 0.004 |
| | 7/18/01 | 1.5 | 1.5 | 0.005 U | 0.005 U | 0.003 | 0.004 UJ1 |
| **EP-90** | 1/24/00 | | 0.12 | | 0.005 U | | 0.011 UJ1 |
| | 4/26/00 | | 0.12 | | 0.006 | | 0.005 |
| | 8/4/00 | | 0.13 | | 0.01 | | 0.003 |
| | 11/3/00 | | 0.14 | | 0.008 | | 0.003 U |
| | 11/3/00 | | 0.14 | | 0.008 | | 0.003 U |
| | 2/12/01 | | 0.14 | | 0.005 U | | 0.006 |
| | 5/8/01 | | 0.14 | | 0.016 | | 0.004 |
| | 7/19/01 | 0.14 | 0.15 | 0.01 | 0.011 | 0.003 U | 0.014 J4 |
| | 7/19/01 | 0.14 | 0.14 | 0.01 | 0.011 | 0.003 U | 0.003 U,UJ4 |
| **EP-101** | 1/25/00 | | 4.5 | | 0.72 | | 0.018 UJ1 |
| | 4/26/00 | | 6.3 | | 1.1 | | 0.033 |
| | 8/4/00 | | 6.8 | | 1.3 | | 0.012 |
| | 11/2/00 | | 7.3 | | 1.7 | | 0.011 |
| | 2/9/01 | | 6.3 | | 1.4 | | 0.004 |
| | 5/8/01 | | 4.7 | | 1.6 | | 0.005 |
| | 7/18/01 | 5.3 | 5.2 | 1.5 | 1.6 | 0.003 U | 0.007 UJ1 |
| **EP-102** | 1/25/00 | | 0.21 | | 0.075 | | 0.012 UJ1 |
| | 4/26/00 | | 0.26 | | 0.095 | | 0.012 |
| | 8/4/00 | | 0.28 | | 0.099 | | 0.009 |
| | 11/3/00 | | 0.24 | | 0.053 | | 0.007 |
| | 2/9/01 | | 0.38 | | 0.095 | | 0.012 |
| | 5/8/01 | | 0.4 | | 0.11 | | 0.006 |
| | 7/18/01 | 0.3 | 0.3 | 0.13 | 0.17 | 0.003 U | 0.01 UJ1 |
| **EP-103** | 1/24/00 | | 0.011 | | 0.005 U | | 0.013 UJ1 |
| | 4/26/00 | | 0.016 | | 0.005 U | | 0.01 |
| | 8/4/00 | | 0.023 | | 0.007 | | 0.003 U |
| | 11/2/00 | | 0.008 | | 0.005 U | | 0.003 U |
| | 2/12/01 | | 0.022 | | 0.005 U | | 0.003 U |

# Table 2-39

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-13 (Sample Mill Area)
## El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| | 5/8/01 | | 0.019 | | 0.007 | | 0.003 U |
| | 7/19/01 | 0.044 | 0.04 | 0.005 U | 0.005 U | 0.003 U | 0.003 U,UJ4 |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met
J2 calibration range exceeded or significant deviation from known values. Possible bias.
J3 Holding time not met. Indicates low bias.
J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.
UJ1 Blank contamination. Indicates possible high bias and/or false positive.
UJ2 Calibration range exceeded or significant deviation from known value.
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.
A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals
T Total Metals

# Table 2-40

## Summary of Soil Sample Results for Investigation Area 14 (South Terrace Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase III | BH14-4 | BH14-4A | 4/10/01 | 0-1 ft. | 670 | 140 | 3800 |
| | | BH14-4B | 4/10/01 | 1-2 ft. | 27 | 15 | 440 |
| | | BH14-4C | 4/10/01 | 2-3 ft. | 28 | 11 | 180 |
| | | BH14-4D | 4/10/01 | 3-4 ft. | 19 | 10 U | 70 |
| | | BH14-4E | 4/10/01 | 4-5 ft. | 10 U | 10 U | 14 |
| | | BH14-4F | 4/10/01 | 10-11 ft. | 11 | 10 U | 36 |
| | BH14-5 | BH14-5A | 4/10/01 | 0-1 ft. | 170 | 110 | 3200 |
| | | BH14-5A | 4/10/01 | 0-1 ft. | 105 | 118 | 3037 |
| | | BH14-5B | 4/10/01 | 1-2 ft. | 100 | 35 | 1300 |
| | | BH14-5D | 4/10/01 | 3-4 ft. | 310 | 88 | 3000 |
| | | BH14-5E | 4/10/01 | 4-5 ft. | 280 | 66 | 2800 |
| | | BH14-5F1 | 4/10/01 | 10-11 ft. | 10 U | 10 U | 21 |
| | | BH14-5F2 | 4/10/01 | 10-11 ft. | 10 U | 10 U | 23 |
| | BH14-6 | BH14-6A | 4/16/01 | 0-1 ft. | 130 | 28 | 950 |
| | | BH14-6B | 4/16/01 | 1-2 ft. | 68 | 10 U | 330 |
| | | BH14-6C | 4/16/01 | 2-3 ft. | 76 | 10 U | 350 |
| | | BH14-6D | 4/16/01 | 3-4 ft. | 21 | 10 U | 46 |
| | | BH14-6E | 4/16/01 | 4-5 ft. | 33 | 11 | 140 |
| | | BH14-6F1 | 4/16/01 | 10-11 ft. | 10 U | 10 U | 15 |
| | | BH14-6F2 | 4/16/01 | 10-11 ft. | 10 U | 10 U | 31 |
| Phase II | BH14-1 | BH14-1A | 11/5/99 | 13.2-15 ft. | 100 | 84 | 31 |
| | | BH14-1B | 11/5/99 | 15-17 ft. | 110 | 92 | 20 |
| | | BH14-1C | 11/5/99 | 20-22 ft. | 150 | 70 | 10 U |
| | | BH14-1D | 11/5/99 | 25-27 ft. | 36 | 10 U | 21 |
| | | BH14-1E | 11/5/99 | 30-32 ft. | 12 | 10 U | 17 |
| | | BH14-1F | 11/5/99 | 35-37 ft. | 10 U | 10 U | 10 U |
| | | BH14-1F2 | 11/5/99 | 35-37 ft. | 10 U | 10 U | 10 U |
| | | BH14-1G | 11/5/99 | 40-42 ft. | 16 | 10 U | 10 U |
| | | BH14-1H | 11/5/99 | 45-47 ft. | 10 U | 10 U | 13 |
| | | BH14-1I | 11/5/99 | 50-52 ft. | 10 U | 10 U | 10 U |
| | | BH14-1J | 11/5/99 | 55-57 ft. | 10 U | 10 U | 10 U |
| | | BH14-1K | 11/5/99 | 60-62 ft. | 40 | 10 U | 10 U |
| | | BH14-1L | 11/8/99 | 65-67 ft. | 10 U | 10 U | 10 U |
| | | BH14-1L2 | 11/8/99 | 65-67 ft. | 10 U | 10 U | 10 U |
| | | BH14-1M | 11/8/99 | 70-72 ft. | 10 U | 10 U | 10 U |
| | BH14-2 | BH14-2A | 12/16/99 | 0 ft. | 210 | 130 | 1400 |
| | | BH14-2B | 12/16/99 | 1 ft. | 170 | 87 | 2800 |
| | | BH14-2C | 12/16/99 | 2 ft. | 210 | 140 | 4400 |
| | | BH14-2D | 12/16/99 | 3 ft. | 62 | 18 | 510 |
| | | BH14-2E | 12/16/99 | 4 ft. | 210 | 18 | 970 |
| | | BH14-2F | 12/16/99 | 10 ft. | 10 U | 12 | 26 J4 |
| | | BH14-2G | 12/16/99 | 15 ft. | 10 U | 10 U | 10 J4 |

# Table 2-40

## Summary of Soil Sample Results for Investigation Area 14 (South Terrace Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase II cont. | BH14-2 cont. | BH14-2H | 12/16/99 | 20 ft. | 11 | 10 U | 10 J4 |
| | | BH14-2I | 12/16/99 | 25 ft. | 17 | 10 U | 21 J4 |
| | | BH14-2I2 | 12/16/99 | 25 ft. | 10 U | 10 U | 42 J4 |
| | | BH14-2J | 12/16/99 | 30 ft. | 10 | 12 | 50 J4 |
| | | BH14-2K | 12/16/99 | 35 ft. | 17 | 10 U | 48 J4 |
| | | BH14-2L | 12/16/99 | 40 ft. | 16 | 10 U | 47 J4 |
| | | BH14-2M | 12/16/99 | 45 ft. | 26 | 10 U | 15 J4 |
| | | BH14-2O | 12/16/99 | 50 ft. | 10 U | 12 | 10 J4 |
| | | BH14-2P | 12/16/99 | 55 ft. | 16 | 10 U | 10 J4 |
| | | BH14-2Q | 12/16/99 | 60 ft. | 10 U | 10 U | 10 U |
| | | BH14-2Q2 | 12/16/99 | 60 ft. | 10 U | 10 U | 10 U |
| | BH14-3 | BH14-3A | 12/15/99 | 0 ft. | 10 U | 16 | 2600 |
| | | BH14-3B | 12/15/99 | 1 ft. | 27 | 10 U | 420 |
| | | BH14-3C | 12/15/99 | 2 ft. | 10 U | 10 U | 250 |
| | | BH14-3D | 12/15/99 | 3 ft. | 10 U | 10 U | 190 |
| | | BH14-3E | 12/15/99 | 4 ft. | 10 U | 10 U | 65 |
| | | BH14-3F | 12/15/99 | 10 ft. | 10 U | 10 U | 74 |
| | | BH14-3G | 12/15/99 | 15 ft. | 43 | 10 U | 530 |
| | | BH14-3H | 12/15/99 | 20 ft. | 19 | 11 | 33 |
| | | BH14-3I | 12/15/99 | 25 ft. | 23 | 10 U | 62 |
| | | BH14-3J | 12/15/99 | 30 ft. | 20 | 10 U | 31 |
| | | BH14-3J2 | 12/15/99 | 30 ft. | 15 | 10 U | 28 |
| | | BH14-3K | 12/15/99 | 35 ft. | 10 U | 10 U | 65 |
| | | BH14-3L | 12/15/99 | 40 ft. | 11 | 10 U | 54 |
| | | BH14-3M | 12/15/99 | 45 ft. | 10 U | 10 U | 10 U |
| | | BH14-3N | 12/15/99 | 50 ft. | 12 | 10 U | 10 U |
| | | BH14-3O | 12/15/99 | 55 ft. | 10 U | 12 | 10 U |
| | | BH14-3P | 12/15/99 | 60 ft. | 10 U | 13 | 10 U |
| | | BH14-3Q | 12/15/99 | 65 ft. | 10 U | 10 U | 10 U |
| | | BH14-3Q2 | 12/15/99 | 65 ft. | 10 U | 10 U | 10 U |
| Phase I | EP-70 | EP-70A | 5/30/97 | 20 ft. | 230 | 79 | 28 |
| | | EP-70B | 5/30/97 | 25 ft. | 130 | 210 | 20 |
| | | EP-70C | 5/30/97 | 30 ft. | 130 | 20 | 24 |
| | | EP-70D | 5/30/97 | 35 ft. | 320 | 190 | 20 |
| | | EP-70E | 5/31/97 | 40 ft. | 390 | 51 | 18 |
| | | EP-70F | 5/31/97 | 45 ft. | 120 | 70 | 18 |
| | EP-70R | EP-70RA | 6/12/97 | 9 ft. | 36 | 27 | 41 |
| | | EP-70RB | 6/12/97 | 15 ft. | 20 U | 10 U | 16 |
| | | EP-70RB2 | 6/12/97 | 15 ft. | 20 U | 10 U | 19 |
| | | EP-70RC | 6/12/97 | 20 ft. | 20 U | 10 U | 25 |
| | | EP-70RD | 6/12/97 | 25 ft. | 20 U | 10 U | 22 |
| | | EP-70RE | 6/12/97 | 30 ft. | 20 U | 10 U | 16 |

# Table 2-40

## Summary of Soil Sample Results for Investigation Area 14 (South Terrace Area) El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Phase I cont. | EP-70R cont. | EP-70RF | 6/12/97 | 35 ft. | 20 U | 10 U | 27 |
| | | EP-70RG | 6/12/97 | 40 ft. | 20 U | 10 U | 20 |
| | | EP-70RH | 6/12/97 | 45 ft. | 20 U | 10 U | 45 |
| | | EP-70RI | 6/12/97 | 50 ft. | 20 U | 10 U | 12 |
| | | EP-70RJ | 6/12/97 | 55 ft. | 20 U | 10 U | 10 U |
| | | EP-70RK | 6/12/97 | 60 ft. | 20 U | 10 U | 16 |
| | | EP-70RL | 6/12/97 | 65 ft. | 20 U | 10 U | 10 U |
| | | EP-70RM | 6/12/97 | 70 ft. | 20 U | 10 U | 10 U |
| | EP-71 | EP-71A | 5/31/97 | 0 ft. | 20 U | 18 | 40 |
| | | EP-71B | 5/31/97 | 5 ft. | 20 U | 10 U | 20 |
| | | EP-71C | 5/31/97 | 10 ft. | 20 U | 10 U | 49 |
| | | EP-71D | 5/31/97 | 15 ft. | 20 U | 10 U | 33 |
| | | EP-71E | 5/31/97 | 25 ft. | 20 U | 10 U | 59 |
| | EP-71R | EP-71RA | 6/11/97 | 0 ft. | 1300 | 120 | 7200 |
| | | EP-71RB | 6/11/97 | 5 ft. | 20 U | 10 U | 90 |
| | | EP-71RC | 6/11/97 | 10 ft. | 20 U | 10 U | 54 |
| | | EP-71RD | 6/11/97 | 15 ft. | 20 U | 10 U | 10 U |
| | | EP-71RE | 6/12/97 | 20 ft. | 20 U | 10 U | 20 |
| | | EP-71RF | 6/12/97 | 25 ft. | 20 U | 10 U | 19 |
| | | EP-71RG | 6/12/97 | 30 ft. | 20 U | 10 U | 29 |
| | | EP-71RH | 6/12/97 | 35 ft. | 20 U | 10 U | 13 |
| | | EP-71RI | 6/12/97 | 40 ft. | 20 U | 10 U | 11 |
| | | EP-71RJ | 6/12/97 | 45 ft. | 20 U | 10 U | 10 U |
| | | EP-71RK | 6/12/97 | 50 ft. | 20 U | 10 U | 13 |
| | | EP-71RL | 6/12/97 | 60 ft. | 20 U | 10 U | 10 U |
| | | EP-71RL2 | 6/12/97 | 60 ft. | 20 U | 10 U | 10 U |
| | EP-72 | EP-72A | 5/31/97 | 15 ft. | 20 U | 220 | 530 |
| | | EP-72B | 5/31/97 | 20 ft. | 20 U | 10 U | 32 |
| | | EP-72C | 6/1/97 | 25 ft. | 20 U | 10 U | 22 |
| | | EP-72C2 | 6/1/97 | 25 ft. | 20 U | 10 U | 24 |
| | | EP-72D | 6/1/97 | 30 ft. | 67 | 25 | 23 |
| | | EP-72E | 6/1/97 | 35 ft. | 54 | 10 U | 38 |
| | | EP-72F | 6/1/97 | 40 ft. | 20 U | 10 U | 29 |

Notes:

All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.

U: Less than listed value (detection limit)

NA: Not applicable

All concentrations in milligrams per kilogram (mg/kg)

Depth in feet below ground surface.

# Table 2-41

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-14 (South Terrace Area)
## El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA14** | | | | | | | |
| **EP-70** | 1/24/00 | | 0.63 | | 0.007 | | 0.01 UJ1 |
| | 1/24/00 | | 0.64 | | 0.008 | | 0.009 UJ1 |
| | 4/25/00 | | 0.59 | | 0.007 | | 0.003 U |
| | 8/3/00 | | 0.56 | | 0.006 | | 0.005 U |
| | 11/1/00 | | 0.57 | | 0.006 | | 0.003 U |
| | 11/1/00 | | 0.58 | | 0.006 | | 0.003 U |
| | 2/9/01 | | 0.56 | | 0.005 | | 0.003 U |
| | 5/7/01 | | 0.6 | | 0.005 | | 0.003 U |
| | 7/18/01 | 0.73 | 0.73 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| **EP-71** | 1/24/00 | | 0.11 | | 0.005 U | | 0.008 UJ1 |
| | 4/24/00 | | 0.11 | | 0.005 U | | 0.003 U |
| | 8/3/00 | | 0.11 | | 0.005 U | | 0.005 U |
| | 8/3/00 | | 0.11 | | 0.005 U | | 0.005 U |
| | 11/1/00 | | 0.11 | | 0.005 U | | 0.003 U |
| | 2/9/01 | | 0.093 | | 0.005 U | | 0.003 U |
| | 2/9/01 | | 0.11 | | 0.005 U | | 0.003 U |
| | 5/7/01 | | 0.11 | | 0.005 U | | 0.003 U |
| | 7/18/01 | 0.11 | 0.12 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| | 7/18/01 | 0.12 | 0.12 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| **EP-72** | 1/24/00 | | 0.065 | | 0.005 U | | 0.011 UJ1 |
| | 4/25/00 | | 0.069 | | 0.005 U | | 0.003 |
| | 8/3/00 | | 0.05 U | | 0.005 U | | 0.005 U |
| | 11/1/00 | | 0.14 | | 0.005 U | | 0.007 |
| | 2/9/01 | | 0.14 | | 0.006 | | 0.003 U |
| | 5/7/01 | | 0.093 | | 0.005 U | | 0.003 U |
| | 7/18/01 | 0.094 | 0.17 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met

J2 calibration range exceeded or significant deviation from known values. Possible bias.

J3 Holding time not met. Indicates low bias.

J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.

UJ1 Blank contamination. Indicates possible high bias and/or false positive.

UJ2 Calibration range exceeded or significant deviation from known value.

UJ3 Holding times not met. Indicates low bias.

UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.

A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals

T Total Metals

# Table 2-42

## Summary of Soil Sample Results for Investigation Area 15
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Closed Plant | BH15-8 | BH15-8B | 2/20/01 | 1-2 ft. | 20000 | 890 | 3700 |
| | | BH15-8C | 2/20/01 | 2-3 ft. | 900 | 320 | 520 |
| | | BH15-8E | 2/20/01 | 4-5 ft. | 1900 | 310 | 1000 |
| | | BH15-8F | 2/20/01 | 5-6 ft. | 25 | 39 | 45 |
| | | | | | | | |
| | BH15-12 | BH15-12C | 2/20/01 | 7-8 ft. | 66 | 10 U | 790 |
| | | BH15-12D | 2/20/01 | 8-9 ft. | 22 | 10 U | 32 |
| | | BH15-12E1 | 2/20/01 | 9-10 ft. | 17 | 18 | 170 |
| | | BH15-12E2 | 2/20/01 | 9-10 ft. | 29 | 10 U | 280 |
| | | BH15-12F | 2/20/01 | 10-11 ft. | 19 | 130 | 51 |
| | | | | | | | |
| | BH15-13 | BH15-13A | 6/1/01 | 20-21 ft. | 38 | 10 U | 57 |
| | | BH15-13B | 6/1/01 | 25-26 ft. | 34 | 10 U | 41 |
| | | BH15-13C | 6/1/01 | 30-31 ft. | 33 | 12 | 40 |
| | | BH15-13D | 6/1/01 | 40-41 ft. | 40 | 10 U | 36 |
| | | BH15-13E | 6/1/01 | 45-46 ft. | 21 | 10 U | 47 |
| | | BH15-13F | 6/1/01 | 50-51 ft. | 27 | 11 | 47 |
| | | BH15-13G | 6/1/01 | 55-56 ft. | 32 | 10 U | 42 |
| | | BH15-13H | 6/1/01 | 60-61 ft. | 29 | 10 U | 46 |
| | | BH15-13I | 6/1/01 | 65-66 ft. | 34 | 10 U | 38 |
| | | BH15-13J | 6/1/01 | 70-71 ft. | 35 | 10 U | 23 |
| | | | | | | | |
| | BH15-14 | BH15-14A | 6/1/01 | 50-51 ft. | 17 | 10 | 31 |
| | | BH15-14B1 | 6/1/01 | 55-56 ft. | 19 | 10 U | 33 |
| | | BH15-14B2 | 6/1/01 | 55-56 ft. | 19 | 10 U | 43 |
| | | BH15-14C | 6/1/01 | 60-61 ft. | 36 | 19 | 32 |
| | | BH15-14D | 6/1/01 | 65-66 ft. | 34 | 10 U | 31 |
| | | BH15-14E | 6/1/01 | 70-71 ft. | 87 | 25 | 28 |
| | | BH15-14E | 6/1/01 | 70-71 ft. | 102 | 29 | 13 |
| | | | | | | | |
| | EP-130 | EP-130A | 5/29/01 | 50-51 ft. | 340 | 27 | 61 |
| | | EP-130B | 5/29/01 | 55-56 ft. | 31 | 10 U | 34 |
| | | EP-130C | 5/29/01 | 60-61 ft. | 56 | 10 U | 30 |
| | | EP-130D | 5/29/01 | 65-66 ft. | 53 | 10 U | 32 |
| | | EP-130E | 5/29/01 | 70-71 ft. | 65 | 10 U | 56 |
| | | EP-130F | 5/29/01 | 75-76 ft. | 35 | 15 | 24 |
| | | EP-130G | 5/29/01 | 80-81 ft. | 64 | 10 U | 39 |
| | | | | | | | |
| | EP-131 | EP-131A | 5/30/01 | 0-1 ft. | 900 | 200 | 4500 |
| | | EP-131B1 | 5/30/01 | 40-41 ft. | 37 | 14 | 80 |
| | | EP-131B2 | 5/30/01 | 40-41 ft. | 27 | 10 U | 93 |
| | | EP-131C | 5/30/01 | 45-46 ft. | 34 | 10 U | 74 |
| | | EP-131D | 5/30/01 | 50-51 ft. | 27 | 10 U | 42 |
| | | EP-131E | 5/30/01 | 55-56 ft. | 26 | 10 U | 42 |

## Table 2-42

## Summary of Soil Sample Results for Investigation Area 15
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| | | EP-131F | 5/30/01 | 60-61 ft. | 21 | 10 | 38 |
| Closed Plant | EP-131 cont. | EP-131G | 5/30/01 | 65-66 ft. | 31 | 10 U | 56 |
| | | EP-131H | 5/30/01 | 70-71 ft. | 46 | 18 | 160 |

Notes:
All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg)
Depth in feet below ground surface.
BH15-1 to BH15-7 and BH15-9 to BH15-11no samples taken, slag

# Table 2-43

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-15 (Former Copper Plant Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA15** | | | | | | | |
| **EP-26** | 1/26/00 | | 0.085 | | 0.29 | | 0.12 |
| | 4/28/00 | | 0.31 | | 0.29 | | 0.014 |
| | 8/7/00 | | 0.38 | | 0.35 | | 0.008 |
| | 11/7/00 | | 0.3 | | 0.26 | | 0.01 |
| | 2/20/01 | | 0.26 | | 0.21 | | 0.006 |
| | 5/10/01 | | 0.26 | | 0.34 | | 0.006 |
| | 5/10/01 | | 0.28 | | 0.35 | | 0.006 |
| | 7/26/01 | 0.39 | 0.38 | 0.43 | 0.41 | 0.003 U | 0.003 U |
| **EP-56** | 2/1/00 | | 2.7 J4 | | 0.005 U | | 0.017 |
| | 2/1/00 | | 2.1 J4 | | 0.005 U | | 0.015 |
| | 5/3/00 | | 1.2 | | 0.005 U | | 0.026 |
| | 8/16/00 | | 1.4 | | 0.005 U | | 0.036 |
| | 11/13/00 | | 2.5 | | 0.005 U | | 0.02 |
| | 2/22/01 | | 2.1 | | 0.005 U | | 0.035 |
| | 5/10/01 | | 3.1 | | 0.005 U | | 0.099 |
| | 7/26/01 | 3 | 3 | 0.005 U | 0.005 U | 0.003 U | 0.038 |
| **EP-130** | 6/8/01 | 0.44 | 0.56 | 0.005 U | 0.005 U | 0.003 U | 0.005 |
| | 7/26/01 | 0.13 | 0.16 | 0.005 U | 0.005 U | 0.003 | 0.033 |
| | 7/26/01 | 0.13 | 0.16 | 0.005 U | 0.005 U | 0.003 | 0.034 |
| | 6/8/01 | 0.91 | 0.9 | 0.005 U | 0.005 U | 0.003 U | 0.005 |
| | 7/26/01 | 1.2 | 1.3 | 0.005 U | 0.005 | 0.003 U | 0.02 |
| **EP-131** | 6/8/01 | 0.91 | 0.9 | 0.005 U | 0.005 U | 0.003 U | 0.005 |
| | 7/26/01 | 1.2 | 1.3 | 0.005 U | 0.005 | 0.003 U | 0.02 |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met

J2 calibration range exceeded or significant deviation from known values. Possible bias.

J3 Holding time not met. Indicates low bias.

J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.

UJ1 Blank contamination. Indicates possible high bias and/or false positive.

UJ2 Calibration range exceeded or significant deviation from known value.

UJ3 Holding times not met. Indicates low bias.

UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.

A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals

T Total Metals

# Table 2-44

## Summary of Soil Sample Results for Investigation Area 16
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Closed Plant | BH16-1 | BH16-1F | 2/28/01 | 11-12 ft. | 43 | 10 U | 89 |
| | | | | | | | |
| | BH16-2 | BH16-2E1 | 2/28/01 | 15-17 ft. | 44 | 10 U | 47 |
| | | BH16-2E2 | 2/28/01 | 15-17 ft. | 53 | 10 U | 52 |
| | | | | | | | |
| | BH16-3 | BH16-3D | 2/21/01 | 3.5-4.5 ft. | 34 | 10 U | 80 |
| | | BH16-3E | 2/21/01 | 4.5-5.5 ft. | 36 | 10 U | 100 |
| | | BH16-3F | 2/28/01 | 11-12 ft. | 10 U | 10 U | 26 |
| | | | | | | | |
| | BH16-4 | BH16-4G | 2/28/01 | 10-11 ft. | 18 | 10 U | 32 |
| | | | | | | | |
| | BH16-5 | BH16-5F | 2/28/01 | 5-6 ft. | 47 | 10 U | 59 |
| | | BH16-5G | 2/28/01 | 15-16 ft. | 68 | 10 U | 290 |
| | | BH16-5H1 | 2/28/01 | 20-21 ft. | 71 | 13 | 77 |
| | | BH16-5H2 | 2/28/01 | 20-21 ft. | 77 | 10 U | 79 |
| | | | | | | | |
| | BH16-7 | BH16-7B | 2/28/01 | 1-2 ft. | 43 | 32 | 220 |
| | | | | | | | |
| | BH16-8 | BH16-8D | 2/28/01 | 5-6 ft. | 51 | 1000 | 70 |
| | | BH16-8E | 2/28/01 | 11-12 ft. | 59 | 710 | 53 |
| | | BH16-8F | 2/28/01 | 15-16 ft. | 42 | 570 | 65 |
| | | | | | | | |
| | BH16-9 | BH16-9E | 2/21/01 | 4-5 ft. | 150 | 62 | 1600 |
| | | BH16-9F | 2/21/01 | 5-6 ft. | 36 | 11 | 49 |
| | | | | | | | |
| | BH16-10 | BH16-10A | 3/1/01 | 30-31 ft. | 32 | 10 U | 95 |
| | | BH16-10B1 | 3/1/01 | 35-36 ft. | 33 | 10 U | 120 |
| | | BH16-10B2 | 3/1/01 | 35-36 ft. | 42 | 10 U | 120 |
| | | | | | | | |
| | BH16-11 | BH16-11B | 2/22/01 | 3-4 ft. | 35 | 10 U | 190 |
| | | BH16-11C | 2/22/01 | 4-5 ft. | 240 | 33 | 3500 |
| | | BH16-11D | 2/22/01 | 5-6 ft. | 110 | 22 | 1100 |
| | | BH16-11E | 2/22/01 | 6-7 ft. | 69 | 10 U | 580 |
| | | BH16-11F | 2/22/01 | 7-8 ft. | 56 | 10 U | 100 |
| | | | | | | | |
| | BH16-14 | BH16-14D | 2/22/01 | 3-4 ft. | 59 | 13 | 750 |
| | | BH16-14E | 2/22/01 | 4-5 ft. | 59 | 10 U | 75 |
| | | BH16-14F | 2/22/01 | 10-11 ft. | 75 | 10 U | 560 |
| | | | | | | | |
| | BH16-18 | BH16-18B1 | 2/22/01 | 1-2 ft. | 34 | 10 U | 88 |
| | | BH16-18B2 | 2/22/01 | 1-2 ft. | 26 | 10 U | 82 |
| | | BH16-18C | 2/22/01 | 2-3 ft. | 130 | 18 | 560 |
| | | BH16-18D | 2/22/01 | 3-4 ft. | 80 | 13 | 470 |
| | | BH16-18E | 2/22/01 | 4-5 ft. | 130 | 21 | 680 |

# Table 2-44

## Summary of Soil Sample Results for Investigation Area 16
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Closed Plant cont. | BH16-18 cont. | BH16-18F | 2/22/01 | 5-6 ft. | 58 | 11 | 310 |
| | BH16-19 | BH16-19A | 2/22/01 | 0-1 ft. | 1200 | 410 | 6900 |
| | | BH16-19A | 2/22/01 | 0-1 ft. | 1001 | 400 | 6802 |
| | | BH16-19B | 2/22/01 | 1-2 ft. | 52 | 10 U | 440 |
| | | BH16-19C | 2/22/01 | 4-5 ft. | 100 | 40 | 860 |
| | | BH16-19D | 2/22/01 | 5-6 ft. | 43 | 11 | 120 |
| | BH16-20 | BH16-20C | 2/22/01 | 3-4 ft. | 1700 | 530 | 11000 |
| | | BH16-20D | 2/22/01 | 5-6 ft. | 1100 | 410 | 7300 |
| | | BH16-20E | 2/22/01 | 13-14 ft. | 450 | 120 | 4100 |
| | | BH16-20F | 2/22/01 | 16-17 ft. | 140 | 10 U | 110 |
| | BH16-21 | BH16-21G | 2/23/01 | 14-15 ft. | 48 | 12 | 1870 |
| | | BH16-21G | 2/23/01 | 14-15 ft. | 48 | 12 | 1870 |
| | BH16-22 | BH16-22E | 2/23/01 | 8-9 ft. | 23 | 10 U | 61 |
| | | BH16-22F | 2/23/01 | 14-15 ft. | 42 | 10 U | 39 |
| | BH16-23 | BH16-23F | 2/23/01 | 8-9 ft. | 140 | 49 | 900 |
| | | BH16-23G1 | 2/23/01 | 9-10 ft. | 34 | 10 U | 49 |
| | | BH16-23G2 | 2/23/01 | 9-10 ft. | 49 | 10 U | 50 |
| | BH16-24 | BH16-24D | 2/23/01 | 3-4 ft. | 100 | 22 | 110 |
| | | BH16-24E | 2/23/01 | 4-5 ft. | 450 | 140 | 630 |
| | | BH16-24F | 2/23/01 | 8-9 ft. | 490 | 55 | 1700 |
| | | BH16-24G | 2/23/01 | 11-12 ft. | 190 | 290 | 1300 |
| | BH16-25 | BH16-25D | 2/23/01 | 3-4 ft. | 94 | 27 | 690 |
| | | BH16-25E | 2/23/01 | 4-5 ft. | 160 | 47 | 1700 |
| | | BH16-25F | 2/23/01 | 5-6 ft. | 44 | 10 U | 370 |
| | | BH16-25G | 2/23/01 | 9-10 ft. | 49 | 10 U | 200 |
| | | BH16-25H | 2/23/01 | 14-15 ft. | 21 | 10 U | 68 |
| | BH16-26 | BH16-26A | 2/23/01 | 1-2 ft. | 100 | 98 | 730 |
| | | BH16-26B | 2/23/01 | 2-3 ft. | 40 | 10 U | 68 |
| | | BH16-26C1 | 2/23/01 | 3-4 ft. | 170 | 70 | 2100 |
| | | BH16-26C2 | 2/23/01 | 3-4 ft. | 110 | 92 | 1700 |
| | | BH16-26D | 2/23/01 | 4-5 ft. | 83 | 58 | 1000 |
| | | BH16-26E | 2/23/01 | 6-7 ft. | 34 | 10 U | 39 |
| | | BH16-26F | 2/23/01 | 9-10 ft. | 44 | 10 U | 240 |
| | BH16-27 | BH16-27F | 2/23/01 | 10-11 ft. | 190 | 110 | 1000 |
| | | BH16-27G | 2/23/01 | 11-12 ft. | 71 | 48 | 250 |

# Table 2-44

## Summary of Soil Sample Results for Investigation Area 16
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Closed Plant cont. | BH16-28 | BH16-28D | 2/26/01 | 3.5-4.5 ft. | 52 | 10 U | 310 |
| | | BH16-28E | 2/26/01 | 4.5-5.5 ft. | 49 | 23 | 120 |
| | | BH16-28E | 2/26/01 | 4.5-5.5 ft. | 15 | 14 | 92 |
| | | BH16-28F | 2/26/01 | 5.5-6 ft. | 22 | 10 | 35 |
| | BH16-29 | BH16-29G | 2/26/01 | 8-9 ft. | 160 | 65 | 180 |
| | BH16-30 | BH16-30B | 2/26/01 | 1-2 ft. | 64 | 10 U | 230 |
| | | BH16-30B2 | 2/26/01 | 1-2 ft. | 37 | 10 U | 183 |
| | | BH16-30C | 2/26/01 | 2-3 ft. | 90 | 10 | 220 |
| | | BH16-30D1 | 2/26/01 | 5-6 ft. | 36 | 10 U | 49 |
| | | BH16-30D2 | 2/26/01 | 5-6 ft. | 43 | 10 U | 62 |
| | BH16-40 | BH16-40F | 2/26/01 | 5-6 ft. | 22 | 17 | 170 |
| | BH16-45 | BH16-45A | 2/28/01 | 61-62 ft. | 70 | 89 | 180 |
| Phase I | EP-74 | EP-74A | 6/2/97 | 2 ft. | 20 U | 10 U | 300 |
| | | EP-74B | 6/2/97 | 5 ft. | 20 U | 28 | 960 |
| | | EP-74C | 6/2/97 | 10 ft. | 20 U | 10 U | 100 |
| | | EP-74D | 6/2/97 | 15 ft. | 140 | 10 U | 250 |
| | | EP-74E | 6/2/97 | 20 ft. | 20 U | 10 U | 38 |
| | | EP-74F | 6/2/97 | 25 ft. | 20 U | 10 U | 19 |
| | | EP-74G | 6/2/97 | 30 ft. | 20 U | 10 U | 24 |
| | | EP-74H | 6/2/97 | 35 ft. | 20 U | 10 U | 26 |
| | | EP-74I | 6/2/97 | 40 ft. | 20 U | 10 U | 22 |
| | | EP-74J | 6/2/97 | 45 ft. | 41 | 10 U | 42 |
| | | EP-74K | 6/2/97 | 50 ft. | 49 | 10 U | 11 |
| | | EP-74L | 6/2/97 | 55 ft. | 40 | 10 U | 10 U |
| | | EP-74M | 6/2/97 | 60 ft. | 46 | 10 U | 19 |
| | | EP-74M2 | 6/2/97 | 60 ft. | 28 | 10 U | 23 |
| | | EP-74N | 6/2/97 | 65 ft. | 24 | 10 U | 16 |

Notes:

All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.

U: Less than listed value (detection limit)

NA: Not applicable

All concentrations in milligrams per kilogram (mg/kg)

Depth in feet below ground surface.

BH16-6, BH16-12, BH16-13, BH16-15 to BH16-17, BH16-31to BH16-39 and BH16-41 to BH16-44 no samples/slag

# Table 2-45

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-16 (Former Lead and Sinter Plants Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA16** | | | | | | | |
| **EP-90** | 1/24/00 | | 0.12 | | 0.005 U | | 0.011 UJ1 |
| | 4/26/00 | | 0.12 | | 0.006 | | 0.005 |
| | 8/4/00 | | 0.13 | | 0.01 | | 0.003 |
| | 11/3/00 | | 0.14 | | 0.008 | | 0.003 U |
| | 11/3/00 | | 0.14 | | 0.008 | | 0.003 U |
| | 2/12/01 | | 0.14 | | 0.005 U | | 0.006 |
| | 5/8/01 | | 0.14 | | 0.016 | | 0.004 |
| | 7/19/01 | 0.14 | 0.15 | 0.01 | 0.011 | 0.003 U | 0.014 J4 |
| | 7/19/01 | 0.14 | 0.14 | 0.01 | 0.011 | 0.003 U | 0.003 U,UJ4 |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met
J2 calibration range exceeded or significant deviation from known values. Possible bias.
J3 Holding time not met. Indicates low bias.
J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.
UJ1 Blank contamination. Indicates possible high bias and/or false positive.
UJ2 Calibration range exceeded or significant deviation from known value.
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.
A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals
T Total Metals

# Table 2-46

## Summary of Soil Sample Results for Investigation Area 17
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Closed Plant | BH17-1 | BH17-1A1 | 3/1/01 | 10-11 ft. | 250 | 78 | 47 |
| | | BH17-1A2 | 3/1/01 | 10-11 ft. | 190 | 61 | 46 |
| | | BH17-1B | 3/1/01 | 15-16 ft. | 61 | 35 | 39 |
| | BH17-2 | BH17-2A | 3/1/01 | 22-23 ft. | 430 | 20 | 64 |
| | | BH17-2B | 3/1/01 | 27-28 ft. | 150 | 10 U | 97 |
| | BH17-3 | BH17-3A | 3/1/01 | 15-16 ft. | 34 | 10 U | 78 |
| | | BH17-3B | 3/1/01 | 19-20 ft. | 54 | 36 | 170 |
| | BH17-4 | BH17-4A1 | 3/1/01 | 17-18 ft. | 37 | 10 U | 100 |
| | | BH17-4A2 | 3/1/01 | 17-18 ft. | 32 | 10 U | 96 |
| | | BH17-4B | 3/1/01 | 21-22 ft. | 21 | 10 U | 52 |
| | BH17-5 | BH17-5A | 3/2/01 | 12-13 ft. | 230 | 10 U | 34 |
| | | BH17-5B1 | 3/2/01 | 17-18 ft. | 470 | 23 | 54 |
| | | BH17-5B2 | 3/2/01 | 17-18 ft. | 460 | 31 | 68 |
| | BH17-6 | BH17-6A | 3/2/01 | 10-11 ft. | 31 | 13 | 54 |
| | | BH17-6A | 3/2/01 | 10-11 ft. | 11 | 10 U | 14 |
| | | BH17-6B | 3/2/01 | 15-16 ft. | 25 | 10 U | 50 |
| | BH17-7 | BH17-7A | 3/2/01 | 15-16 ft. | 31 | 58 | 48 |
| | | BH17-7B | 3/2/01 | 21-22 ft. | 36 | 24 | 66 |
| | BH17-8 | BH17-8A | 3/2/01 | 1-2 ft. | 290 | 66 | 1200 |
| | | BH17-8B | 3/2/01 | 3-4 ft. | 65 | 12 | 62 |
| | | BH17-8C1 | 3/2/01 | 5-6 ft. | 48 | 10 | 96 |
| | | BH17-8C2 | 3/2/01 | 5-6 ft. | 62 | 10 U | 92 |
| | BH17-9 | BH17-9A | 3/2/01 | 5-6 ft. | 39 | 10 U | 120 |
| | | BH17-9B | 3/2/01 | 10-11 ft. | 25 | 10 U | 74 |
| | BH17-10 | BH17-10B | 3/2/01 | 9-10 ft. | 76 | 32 | 24 |
| | | BH17-10C | 3/2/01 | 14-15 ft. | 56 | 10 U | 240 |
| | BH17-11 | BH17-11A | 3/2/01 | 20-21 ft. | 33 | 10 U | 75 |
| | | BH17-11B | 3/2/01 | 25-26 ft. | 11 | 10 U | 26 |
| | BH17-12 | BH17-12A | 3/2/01 | 33-34 ft. | 34 | 11 | 32 |
| | | BH17-12B | 3/2/01 | 38-39 ft. | 57 | 10 | 54 |
| | BH17-13 | BH17-13A | 3/5/01 | 25-26 ft. | 50 | 89 | 96 |
| | | BH17-13B | 3/5/01 | 30-31 ft. | 36 | 39 | 140 |

## Table 2-46

## Summary of Soil Sample Results for Investigation Area 17
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead |
|---|---|---|---|---|---|---|---|
| Closed Plant | BH17-13 | BH17-13B2 | 3/5/01 | 30-31 ft. | 16 | 43 | 82 |
| | BH17-14 | BH17-14A | 3/5/01 | 20-21 ft. | 22 | 61 | 54 |
| | | BH17-14B | 3/5/01 | 25-26 ft. | 67 | 28 | 73 |
| | BH17-15 | BH17-15A | 3/5/01 | 15-16 ft. | 20 | 10 U | 57 |
| | | BH17-15B | 3/5/01 | 20-21 ft. | 32 | 10 U | 51 |
| | BH17-16 | BH17-16A | 3/5/01 | 10-11 ft. | 87 | 10 U | 42 |
| | | BH17-16B | 3/5/01 | 15-16 ft. | 22 | 24 | 41 |
| | BH17-17 | BH17-17E | 3/5/01 | 10-11 ft. | 95 | 120 | 66 |
| | | BH17-17F1 | 3/5/01 | 15-16 ft. | 10 U | 42 | 27 |
| | | BH17-17F2 | 3/5/01 | 15-16 ft. | 21 | 56 | 20 |
| | BH17-18 | BH17-18A | 3/6/01 | 13-14 ft. | 13 | 10 U | 53 |
| | | BH17-18B | 3/6/01 | 18-19 ft. | 10 U | 10 U | 21 |
| | BH17-19 | BH17-19A | 3/6/01 | 0-1 ft. | 86 | 36 | 220 |
| | | BH17-19B | 3/6/01 | 15-16 ft. | 35 | 11 | 110 |
| | | BH17-19C | 3/6/01 | 20-21 ft. | 10 U | 11 | 10 |
| | BH17-20 | BH17-20A | 3/6/01 | 18-19 ft. | 10 U | 10 U | 21 |
| | | BH17-20B | 3/6/01 | 23-24 ft. | 35 | 13 | 49 |

Notes:
All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg)
Depth in feet below ground surface.

# Table 2-47

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-17 (Former Cadmium and Zinc Plants Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA17** | | | | | | | |
| **EP-23** | 2/1/00 | | 3.1 J4 | | 0.006 | | 0.081 |
| | 5/3/00 | | 2.6 | | 0.005 | | 0.06 |
| | 8/16/00 | | 4.7 | | 0.007 | | 0.077 |
| | 11/13/00 | | 7 | | 0.005 U | | 0.043 |
| | 2/21/01 | | 8.6 | | 0.016 | | 0.16 |
| | 5/10/01 | | 5.2 | | 0.012 | | 0.12 |
| | 7/20/01 | 0.77 | 0.96 | 0.005 U | 0.005 U | 0.003 U | 0.02 |
| **EP-24** | 2/1/00 | | 0.006 J4 | | 0.005 U | | 0.008 |
| | 5/8/00 | | 0.028 | | 0.005 U | | 0.003 |
| | 8/16/00 | | 0.042 J4 | | 0.005 U | | 0.003 U |
| | 11/14/00 | | 0.01 | | 0.005 U | | 0.004 |
| | 2/26/01 | | 0.005 U | | 0.005 U | | 0.01 J4 |
| | 5/16/01 | | 0.055 | | 0.005 U | | 0.003 U |
| | 7/30/01 | 0.022 | 0.042 | 0.005 U | 0.005 U | 0.003 | 0.003 U |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met

J2 calibration range exceeded or significant deviation from known values. Possible bias.

J3 Holding time not met. Indicates low bias.

J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.

UJ1 Blank contamination. Indicates possible high bias and/or false positive.

UJ2 Calibration range exceeded or significant deviation from known value.

UJ3 Holding times not met. Indicates low bias.

UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis is necessary for verification.

A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals

T Total Metals

# Table 2-48

## Summary os Soil Sample Results for Investigation Area 18
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | | Lead |
|---|---|---|---|---|---|---|---|---|
| Closed Plant | BH18-1 | BH18-1A | 3/6/01 | 0-1 ft. | 240 | 18 | | 610 |
| | | BH18-1B | 3/6/01 | 1-2 ft. | 44 | 10 | U | 51 |
| | | BH18-1C | 3/6/01 | 2-3 ft. | 64 | 10 | U | 90 |
| | | BH18-1D | 3/6/01 | 3-4 ft. | 22 | 10 | U | 33 |
| | | BH18-1E1 | 3/6/01 | 4-5 ft. | 48 | 10 | U | 56 |
| | | | | | | | | |
| | BH18-2 | BH18-2A | 3/6/01 | 1-2 ft. | 93 | 10 | U | 80 |
| | | BH18-2B | 3/6/01 | 2-3 ft. | 78 | 10 | U | 51 |
| | | BH18-2C | 3/6/01 | 3-4 ft. | 55 | 10 | | 49 |
| | | BH18-2D | 3/6/01 | 4-5 ft. | 25 | 10 | U | 36 |
| | | BH18-2E | 3/6/01 | 5-6 ft. | 36 | 10 | U | 47 |
| | | | | | | | | |
| | BH18-3 | BH18-3A | 3/6/01 | 0.2-1 ft. | 51 | 10 | U | 100 |
| | | BH18-3B | 3/6/01 | 1-2 ft. | 49 | 10 | U | 50 |
| | | BH18-3C | 3/6/01 | 2-3 ft. | 98 | 10 | U | 69 |
| | | BH18-3D | 3/6/01 | 3-4 ft. | 97 | 10 | U | 49 |
| | | BH18-3E1 | 3/6/01 | 1-5 ft. | 130 | 16 | | 150 |
| | | BH18-3E2 | 3/6/01 | 4-5 ft. | 120 | 10 | U | 98 |
| | | BH18-3F | 3/6/01 | 5-6 ft. | 110 | 10 | U | 49 |
| | | | | | | | | |
| | BH18-4 | BH18-4A1 | 3/6/01 | 0.1-1 ft. | 44 | 11 | | 200 |
| | | BH18-4A2 | 3/6/01 | 0.1-1 ft. | 73 | 26 | | 560 |
| | | BH18-4B | 3/6/01 | 1-2 ft. | 68 | 11 | | 450 |
| | | BH18-4C | 3/6/01 | 2-3 ft. | 62 | 10 | U | 74 |
| | | BH18-4D | 3/6/01 | 3-4 ft. | 48 | 10 | U | 37 |
| | | BH18-4E | 3/6/01 | 4-5 ft. | 30 | 10 | U | 35 |
| | | BH18-4F | 3/6/01 | 5-6 ft. | 28 | 10 | U | 24 |
| | | | | | | | | |
| | BH18-5 | BH18-5A | 3/6/01 | 0.2-1 ft. | 260 | 10 | U | 160 |
| | | BH18-5B | 3/6/01 | 1-2 ft. | 67 | 10 | U | 43 |
| | | BH18-5C | 3/6/01 | 2-3 ft. | 70 | 10 | U | 69 |
| | | BH18-5D1 | 3/6/01 | 3-4 ft. | 33 | 10 | U | 40 |
| | | BH18-5D2 | 3/6/01 | 3-4 ft. | 32 | 10 | U | 37 |
| | | BH18-5E | 3/6/01 | 4-5 ft. | 150 | 10 | | 120 |
| | | BH18-5F | 3/6/01 | 5-6 ft. | 35 | 10 | U | 38 |

Notes:
All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg)
Depth in feet below ground surface.

# Table 2-48

## Summary os Soil Sample Results for Investigation Area 18
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | | Lead |
|---|---|---|---|---|---|---|---|---|
| Closed Plant | BH18-1 | BH18-1A | 3/6/01 | 0-1 ft. | 240 | 18 | | 610 |
| | | BH18-1B | 3/6/01 | 1-2 ft. | 44 | 10 | U | 51 |
| | | BH18-1C | 3/6/01 | 2-3 ft. | 64 | 10 | U | 90 |
| | | BH18-1D | 3/6/01 | 3-4 ft. | 22 | 10 | U | 33 |
| | | BH18-1E1 | 3/6/01 | 4-5 ft. | 48 | 10 | U | 56 |
| | | | | | | | | |
| | BH18-2 | BH18-2A | 3/6/01 | 1-2 ft. | 93 | 10 | U | 80 |
| | | BH18-2B | 3/6/01 | 2-3 ft. | 78 | 10 | U | 51 |
| | | BH18-2C | 3/6/01 | 3-4 ft. | 55 | 10 | | 49 |
| | | BH18-2D | 3/6/01 | 4-5 ft. | 25 | 10 | U | 36 |
| | | BH18-2E | 3/6/01 | 5-6 ft. | 36 | 10 | U | 47 |
| | | | | | | | | |
| | BH18-3 | BH18-3A | 3/6/01 | 0.2-1 ft. | 51 | 10 | U | 100 |
| | | BH18-3B | 3/6/01 | 1-2 ft. | 49 | 10 | U | 50 |
| | | BH18-3C | 3/6/01 | 2-3 ft. | 98 | 10 | U | 69 |
| | | BH18-3D | 3/6/01 | 3-4 ft. | 97 | 10 | U | 49 |
| | | BH18-3E1 | 3/6/01 | 1-5 ft. | 130 | 16 | | 150 |
| | | BH18-3E2 | 3/6/01 | 4-5 ft. | 120 | 10 | U | 98 |
| | | BH18-3F | 3/6/01 | 5-6 ft. | 110 | 10 | U | 49 |
| | | | | | | | | |
| | BH18-4 | BH18-4A1 | 3/6/01 | 0.1-1 ft. | 44 | 11 | | 200 |
| | | BH18-4A2 | 3/6/01 | 0.1-1 ft. | 73 | 26 | | 560 |
| | | BH18-4B | 3/6/01 | 1-2 ft. | 68 | 11 | | 450 |
| | | BH18-4C | 3/6/01 | 2-3 ft. | 62 | 10 | U | 74 |
| | | BH18-4D | 3/6/01 | 3-4 ft. | 48 | 10 | U | 37 |
| | | BH18-4E | 3/6/01 | 4-5 ft. | 30 | 10 | U | 35 |
| | | BH18-4F | 3/6/01 | 5-6 ft. | 28 | 10 | U | 24 |
| | | | | | | | | |
| | BH18-5 | BH18-5A | 3/6/01 | 0.2-1 ft. | 260 | 10 | U | 160 |
| | | BH18-5B | 3/6/01 | 1-2 ft. | 67 | 10 | U | 43 |
| | | BH18-5C | 3/6/01 | 2-3 ft. | 70 | 10 | U | 69 |
| | | BH18-5D1 | 3/6/01 | 3-4 ft. | 33 | 10 | U | 40 |
| | | BH18-5D2 | 3/6/01 | 3-4 ft. | 32 | 10 | U | 37 |
| | | BH18-5E | 3/6/01 | 4-5 ft. | 150 | 10 | | 120 |
| | | BH18-5F | 3/6/01 | 5-6 ft. | 35 | 10 | U | 38 |
| | | | | | | | | |

Notes:
All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg)
Depth in feet below ground surface.

# Table 2-49

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-18 (Former Antimony Plant Area) El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA18** | | | | | | | |
| **EM-1** | 1/31/00 | | 0.005 U | | 0.005 U | | 0.003 |
| | 5/4/00 | | 0.005 U | | 0.005 U | | 0.011 |
| | 8/16/00 | | 0.005 U,UJ4 | | 0.005 U | | 0.015 |
| | 11/14/00 | | 0.005 U | | 0.005 U | | 0.009 |
| | 2/22/01 | | 0.005 U | | 0.005 U | | 0.003 U |
| | 2/22/01 | | 0.005 U | | 0.005 U | | 0.003 U |
| | 5/16/01 | | 0.005 U | | 0.005 U | | 0.007 |
| | 7/31/01 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.003 U | 0.008 |
| | 7/31/01 | 0.005 U | 0.005 U | 0.005 U | 0.005 U | 0.003 U | 0.009 |
| **EP-68** | 1/25/00 | | 0.005 U | | 0.005 U | | 0.01 UJ1 |
| | 1/25/00 | | 0.005 | | 0.005 U | | 0.01 UJ1 |
| | 4/24/00 | | 0.005 | | 0.005 U | | 0.003 U |
| | 4/24/00 | | 0.005 | | 0.005 U | | 0.003 U |
| | 8/2/00 | | 0.005 U | | 0.005 U | | 0.005 U |
| | 10/31/00 | | 0.005 U | | 0.005 U | | 0.003 U |
| | 2/9/01 | | 0.008 | | 0.005 U | | 0.004 |
| | 5/7/01 | | 0.006 | | 0.005 U | | 0.003 U |
| | 7/17/01 | 0.011 | 0.013 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| **EP-106** | 1/25/00 | | 0.007 | | 0.005 U | | 0.014 UJ1 |
| | 4/26/00 | | 0.005 U | | 0.005 U | | 0.003 U |
| | 8/2/00 | | 0.006 | | 0.005 U | | 0.006 |
| | 11/2/00 | | 0.007 | | 0.005 U | | 0.003 U |
| | 2/12/01 | | 0.017 | | 0.015 | | 0.006 |
| | 5/9/01 | | 0.014 | | 0.005 U | | 0.003 U |
| | 7/18/01 | 0.05 | 0.049 | 0.073 | 0.07 | 0.003 U | 0.003 U |
| **EP-124** | 5/16/01 | | 7.1 | | 0.024 | | 0.19 |
| | 7/27/01 | 10 | 9.8 | 0.005 U | 0.005 U | 0.008 | 0.018 |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met

J2 calibration range exceeded or significant deviation from known values. Possible bias.

J3 Holding time not met. Indicates low bias.

J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.

UJ1 Blank contamination. Indicates possible high bias and/or false positive.

UJ2 Calibration range exceeded or significant deviation from known value.

UJ3 Holding times not met. Indicates low bias.

UJ4 Other QC outside control limits.

R Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis in necessary for verification.

A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals

T Total Metals

# Table 2-50

## Summary of Soil Sample Results for Investigation Area 19
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | | Cadmium | | Lead | | Analysis |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Baseline | BL2 | BL2A | 07/27/00 | 0-0.2 ft. | 216 | | 10 | U | 629 | | ICP |
| | | BL2A | 07/27/00 | 0-0.2 ft. | 310 | | 10 | U | 800 | | XRF |
| | | BL2A2 | 07/27/00 | 0-0.2 ft. | 214 | | 10 | U | 630 | | ICP |
| | | BL2A2 | 07/27/00 | 0-0.2 ft. | 310 | | 10 | U | 870 | | XRF |
| | | BL2B | 07/27/00 | 5.0-6.5 ft. | 36 | | 10 | U | 181 | | ICP |
| | | BL2B | 07/27/00 | 5.0-6.5 ft. | 49 | | 10 | U | 150 | | XRF |
| | | BL2C | 07/27/00 | 10.0-11.5 ft. | 16 | | 10 | U | 46 | | ICP |
| | | BL2C | 07/27/00 | 10.0-11.5 ft. | 26 | | 10 | U | 32 | | XRF |
| | | BL2D | 07/27/00 | 14.5-16.0 ft. | 10 | U | 10 | U | 26 | | ICP |
| | | BL2D | 07/27/00 | 14.5-16.0 ft. | 14 | | 10 | U | 38 | | XRF |
| | | BL2E | 07/27/00 | 19.0-20.5 ft. | 10 | U | 10 | U | 44 | | ICP |
| | | BL2E | 07/27/00 | 19.0-20.5 ft. | 10 | U | 10 | U | 53 | | XRF |
| | | BL2F | 07/27/00 | 24.0-25.5 ft. | 10 | U | 10 | U | 26 | | ICP |
| | | BL2F | 07/27/00 | 24.0-25.5 ft. | 10 | U | 10 | U | 63 | | XRF |
| | | BL2G | 07/31/00 | 27-27.5 ft. | 13 | | 10 | U | 28 | | ICP |
| | | BL2G | 07/31/00 | 27-27.5 ft. | 10 | U | 10 | U | 56 | | XRF |
| | | BL2H | 07/31/00 | 29.29.5 ft. | 20 | | 10 | U | 40 | | ICP |
| | | BL2H | 07/31/00 | 29.29.5 ft. | 10 | U | 10 | U | 10 | U | XRF |
| | | BL2I | 07/31/00 | 33-33.5 ft. | 18 | | 10 | U | 36 | | ICP |
| | | BL2I | 07/31/00 | 33-33.5 ft. | 10 | U | 10 | U | 70 | | XRF |
| Phase III | BL25 | BL25A | 06/26/01 | 0-2 in | 56 | | 18 | | 349 | | XRF |
| | | BL25B | 06/26/01 | 2-4 in | 64 | | 14 | | 403 | | XRF |
| | | BL25C | 08/13/01 | 1-2 ft | 50 | | 10 | U | 140 | | XRF |
| | BL26 | BL26A | 06/26/01 | 0-2 in | 30 | | 10 | | 125 | | XRF |
| | | BL26B | 06/26/01 | 2-4 in | 39 | | 13 | | 136 | | XRF |
| | | BL26C | 08/13/01 | 1-2 ft | 31 | | 12 | | 180 | | XRF |
| | BL27 | BL27A | 06/26/01 | 0-2 in | 20 | | 14 | | 95 | | XRF |
| | | BL27B | 06/26/01 | 2-4 in | 25 | | 10 | U | 146 | | XRF |
| | | BL27C1 | 08/13/01 | 1-2 ft | 18 | | 13 | | 130 | | XRF |
| | | BL27C2 | 08/13/01 | 1-2 ft | 25 | | 10 | U | 140 | | XRF |
| | BL28 | BL28A | 06/26/01 | 0-2 in | 38 | | 10 | U | 50 | | XRF |
| | | BL28B | 06/26/01 | 2-4 in | 61 | | 10 | U | 65 | | XRF |
| | | BL28C | 08/13/01 | 1-2 ft | 55 | | 10 | U | 77 | | XRF |
| | BL29 | BL29A | 06/26/01 | 0-2 in | 192 | | 42 | | 1600 | | XRF |
| | | BL29B | 06/26/01 | 2-4 in | 23 | | 10 | U | 48 | | XRF |
| | | BL29C | 08/13/01 | 1-2 ft | 37 | | 10 | U | 130 | | XRF |
| | | BL29C | 08/13/01 | 1-2 ft | 33 | | 10 | U | 61 | | XRF |
| | BL30 | BL30A | 06/26/01 | 0-2 in | 145 | | 24 | | 662 | | XRF |
| | | BL30B | 06/26/01 | 2-4 in | 23 | | 13 | | 44 | | XRF |

# Table 2-50

## Summary of Soil Sample Results for Investigation Area 19
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | | Lead | Analysis |
|---|---|---|---|---|---|---|---|---|---|
| Phase III cont. | BL30 | BL30C | 08/13/01 | 1-2 ft | 33 | 10 | U | 61 | XRF |
| | | | | | | | | | |
| | BL51 | BL51 | 06/26/01 | 0-2 in | 166 | 29 | | 1690 | XRF |
| | | BL51 | 06/26/01 | 0-2 in | 216 | 39 | | 1551 | XRF |
| | | | | | | | | | |

Notes:
All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg)
Depth in feet/inches below ground surface.

# Table 2-51

## Summary of Phase III RI Groundwater Quality Results (Metal Analysis) for IA-19 (La Calavera Area)
## El Paso Asarco Smelter, Remedial Investigation

| Sample ID | Sample Date | As Dis mg/l | As T mg/l | Cd Dis mg/l | Cd T mg/l | Pb Dis mg/l | Pb T mg/l |
|---|---|---|---|---|---|---|---|
| **IA19** | | | | | | | |
| **EP-86** | 1/27/00 | | 0.005 | | 0.005 U | | 0.006 |
| | 5/2/00 | | 0.008 UJ1 | | 0.005 U | | 0.005 |
| | 8/9/00 | | 0.005 U | | 0.005 U | | 0.003 U |
| | 11/9/00 | | 0.007 | | 0.005 U | | 0.003 U |
| | 2/15/01 | | 0.009 | | 0.005 U | | 0.003 U |
| | 2/15/01 | | 0.01 | | 0.005 U | | 0.003 U |
| | 5/14/01 | | 0.006 | | 0.005 U | | 0.004 |
| | 7/25/01 | 0.013 | 0.011 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |
| | 7/25/01 | 0.014 | 0.012 | 0.005 U | 0.005 U | 0.003 U | 0.003 U |

**Note:**

J The associated numerical value is an estimated quantity because quality control criteria were not met
J2 calibration range exceeded or significant deviation from known values. Possible bias.
J3 Holding time not met. Indicates low bias.
J4 Other QC outside control limits

U Undetected. Below method detection limits.

UJ The material was analyzed for, but was not detected above the associated value.
UJ1 Blank contamination. Indicates possible high bias and/or false positive.
UJ2 Calibration range exceeded or significant deviation from known value.
UJ3 Holding times not met. Indicates low bias.
UJ4 Other QC outside control limits.
R Quality control indicates that the data are unusable (compound may or may not be present). Resampling and/or reanalysis in necessary for verification.

A Anomalous data. No apparent explanation for discrepancy in data. (Not an EPA code).

Dis Dissolved Metals
T Total Metals

# Table 2-52

## Summary of Soil Sample Results for Investigation Area 20
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead | Analysis |
|---|---|---|---|---|---|---|---|---|
| Baseline | BL1 | BL1A | 7/26/00 | 0-0.2 ft. | 826 | 30 | 4930 | ICP |
| | | BL1A | 7/26/00 | 0-0.2 ft. | 1200 | 44 | 6700 | XRF |
| | | BL1A2 | 7/26/00 | 0-0.2 ft. | 760 | 41 | 5570 | ICP |
| | | BL1A2 | 7/26/00 | 0-0.2 ft. | 1000 | 44 | 6800 | XRF |
| | | BL1B | 7/26/00 | 5.0-6.0 ft. | 181 | 10 U | 1200 | ICP |
| | | BL1B | 7/26/00 | 5.0-6.0 ft. | 180 | 10 U | 1000 | XRF |
| | | BL1C | 7/31/00 | 10.5-11 ft. | 12 | 10 U | 50 | ICP |
| | | BL1C | 7/31/00 | 10.5-11 ft. | 10 U | 10 U | 63 | XRF |
| | | BL1D | 7/31/00 | 11 -11.6 ft. | 26 | 10 U | 235 | ICP |
| | | BL1D | 7/31/00 | 11 -11.6 ft. | 10 U | 10 U | 167 | XRF |
| | | | | | | | | |
| | BL3 | BL3A | 7/27/00 | 0-0.2 ft. | 18 | 10 U | 194 | ICP |
| | | BL3A | 7/27/00 | 0-0.2 ft. | 10 U | 10 U | 190 | XRF |
| | | BL3B | 7/27/00 | 5.0-6.5 ft. | 32 | 10 U | 285 | ICP |
| | | BL3B | 7/27/00 | 5.0-6.5 ft. | 34 | 10 U | 340 | XRF |
| | | BL3C | 7/27/00 | 10.0-11.5 ft. | 14 | 10 U | 106 | ICP |
| | | BL3C | 7/27/00 | 10.0-11.5 ft. | 11 | 10 U | 130 | XRF |
| | | BL3D | 7/27/00 | 14.0-15.5 ft. | 12 | 10 U | 97 | ICP |
| | | BL3D | 7/27/00 | 14.0-15.5 ft. | 21 | 10 U | 110 | XRF |
| | | BL3E | 7/31/00 | 16.5-17 ft. | 12 | 10 U | 19 | ICP |
| | | BL3E | 7/31/00 | 16.5-17 ft. | 13 | 10 U | 25 | XRF |
| | | BL3F | 7/31/00 | 21.3-21.8 ft. | 13 | 10 U | 15 | ICP |
| | | BL3F | 7/31/00 | 21.3-21.8 ft. | 10 U | 10 U | 25 | XRF |
| | | | | | | | | |
| | BL4 | BL4A | 7/28/00 | 0-0.2 ft. | 10 U | 10 U | 77 | ICP |
| | | BL4A | 7/28/00 | 0-0.2 ft. | 10 U | 10 U | 85 | XRF |
| | | BL4A2 | 7/28/00 | 0-0.2 ft. | 10 U | 10 U | 50 | ICP |
| | | BL4A2 | 7/28/00 | 0-0.2 ft. | 10 U | 10 U | 81 | XRF |
| | | BL4B | 7/28/00 | 5.0-6.0 ft. | 10 U | 10 U | 14 | ICP |
| | | BL4B | 7/28/00 | 5.0-6.0 ft. | 10 U | 10 U | 34 | XRF |
| | | BL4C | 7/28/00 | 10.0-11.5 ft. | 10 U | 10 U | 22 | ICP |
| | | BL4C | 7/28/00 | 10.0-11.5 ft. | 10 U | 10 U | 42 | XRF |
| | | BL4D | 7/28/00 | 15.0-16.5 ft. | 10 U | 10 U | 52 | ICP |
| | | BL4D | 7/28/00 | 15.0-16.5 ft. | 10 U | 10 U | 61 | XRF |
| | | BL4E | 7/31/00 | 17.5-18 ft. | 10 U | 10 U | 73 | ICP |
| | | BL4E | 7/31/00 | 17.5-18 ft. | 10 U | 10 U | 110 | XRF |
| | | | | | | | | |
| | BL5 | BL5A | 7/29/00 | 0-0.2 ft. | 18 | 10 U | 107 | ICP |
| | | BL5A | 7/29/00 | 0-0.2 ft. | 10 U | 10 U | 120 | XRF |
| | | BL5A2 | 7/29/00 | 0-0.2 ft. | 14 | 10 U | 105 | ICP |
| | | BL5A2 | 7/29/00 | 0-0.2 ft. | 10 U | 10 U | 120 | XRF |
| | | BL5B | 7/29/00 | 5.0-6.0 ft. | 10 U | 10 U | 31 | ICP |
| | | BL5B | 7/29/00 | 5.0-6.0 ft. | 10 U | 10 U | 26 | XRF |
| | | BL5C | 7/29/00 | 10.0-11.5 ft. | 10 U | 10 U | 24 | ICP |
| | | BL5C | 7/29/00 | 10.0-11.5 ft. | 10 U | 10 U | 44 | XRF |

## Table 2-52

## Summary of Soil Sample Results for Investigation Area 20
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | | Cadmium | | Lead | Analysis |
|---|---|---|---|---|---|---|---|---|---|---|
| Baseline cont. | BL5 cont. | BL5D | 7/29/00 | 15.0-16.5 ft. | 10 | U | 10 | U | 24 | ICP |
| | | BL5D | 7/29/00 | 15.0-16.5 ft. | 10 | U | 10 | U | 31 | XRF |
| | | BL5E | 7/29/00 | 20.0-21.5 ft. | 10 | U | 10 | U | 18 | ICP |
| | | BL5E | 7/29/00 | 20.0-21.5 ft. | 10 | U | 10 | U | 40 | XRF |
| | | BL5F | 7/29/00 | 25.0-26.5 ft. | 10 | U | 10 | U | 24 | ICP |
| | | BL5F | 7/29/00 | 25.0-26.5 ft. | 10 | U | 10 | U | 33 | XRF |
| | BL17 | BL17 | 6/5/00 | SS | 30 | | 10 | U | 59 | ICP |
| | | BL17 | 6/5/00 | SS | 34 | | 10 | U | 71 | XRF |
| | BL18 | BL18 | 6/5/00 | SS | 46 | | 10 | U | 197 | ICP |
| | | BL18 | 6/5/00 | SS | 30 | | 10 | U | 220 | XRF |
| | BL19 | BL19 | 8/1/00 | SS | 10 | U | 10 | U | 22 | ICP |
| | | BL19 | 8/1/00 | SS | 14 | | 10 | U | 34 | XRF |
| | BL20 | BL20 | 8/1/00 | SS | 13 | | 10 | U | 13 | ICP |
| | | BL20 | 8/1/00 | SS | 10 | U | 10 | U | 46 | XRF |
| | BL21 | BL21A | 6/6/01 | 0-2 in | 34 | | 10 | U | 110 | XRF |
| | BL22 | BL22A | 6/6/01 | 0-2 in | 22 | | 10 | U | 55 | XRF |
| | BL23 | BL23A | 6/6/01 | 0-2 in | 38 | | 13 | | 260 | XRF |
| | BL24 | BL24A | 6/6/01 | 0-2 in | 30 | | 12 | | 170 | XRF |
| | BL31 | BL31A | 6/27/01 | 0-2 in | 25 | | 10 | U | 134 | XRF |
| | | BL31B | 6/27/01 | 2-4 in | 35 | | 10 | U | 38 | XRF |
| | BL32 | BL32A | 6/27/01 | 0-2 in | 37 | | 18 | | 300 | XRF |
| | | BL32B | 6/27/01 | 2-4 in | 35 | | 10 | U | 62 | XRF |
| | BL33 | BL33A | 6/27/01 | 0-2 in | 40 | | 10 | U | 230 | XRF |
| | | BL33B | 6/27/01 | 2-4 in | 28 | | 10 | U | 59 | XRF |
| | BL34 | BL34A | 6/27/01 | 0-2 in | 37 | | 10 | U | 163 | XRF |
| | | BL34B | 6/27/01 | 2-4 in | 19 | | 10 | U | 45 | XRF |
| | BL35 | BL35A | 6/27/01 | 0-2 in | 33 | | 10 | | 206 | XRF |
| | | BL35B | 6/27/01 | 2-4 in | 29 | | 10 | U | 101 | XRF |
| | BL36 | BL36A | 6/27/01 | 0-2 in | 38 | | 10 | U | 135 | XRF |
| | | BL36B | 6/27/01 | 2-4 in | 38 | | 11 | | 44 | XRF |

# Table 2-52

## Summary of Soil Sample Results for Investigation Area 20
## El Paso ASARCO Smelter, Remedial Investigation

| Project | Site | Sample # | Date | Depth | Arsenic | Cadmium | Lead | Analysis |
|---|---|---|---|---|---|---|---|---|
| Baseline cont. | BL37 | BL37A | 6/27/01 | 0-2 in | 27 | 10 U | 38 | XRF |
| | | BL37B | 6/27/01 | 2-4 in | 11 | 10 U | 40 | XRF |
| | BL38 | BL38A | 6/27/01 | 0-2 in | 12 | 18 | 37 | XRF |
| | BL39 | BL39A | 6/27/01 | 0-2 in | 62 | 10 U | 414 | XRF |
| | | BL39B | 6/27/01 | 2-4 in | 51 | 10 U | 95 | XRF |
| | BL40 | BL40A | 6/27/01 | 0-2 in | 54 | 18 | 440 | XRF |
| | | BL40B | 6/27/01 | 2-4 in | 54 | 10 U | 171 | XRF |
| | BL41 | BL41A | 6/27/01 | 0-2 in | 20 | 12 | 205 | XRF |
| | | BL41B | 6/27/01 | 2-4 in | 38 | 10 U | 258 | XRF |
| | BL42 | BL42 | 6/28/01 | 0-2 in | 31 | 12 | 79 | XRF |
| | BL43 | BL43A | 6/28/01 | 0-2 in | 235 | 34 | 1180 | XRF |
| | | BL43A | 6/28/01 | 0-2 in | 155 | 34 | 1075 | XRF |
| | BL44 | BL44A | 6/27/01 | 0-2 in | 27 | 12 | 46 | XRF |
| | | BL44B | 6/28/01 | 2-4 in | 40 | 11 | 73 | XRF |
| | BL45 | BL45A | 6/27/01 | 0-2 in | 37 | 10 U | 36 | XRF |
| | BL46 | BL46A | 6/28/01 | 0-2 in | 36 | 10 U | 47 | XRF |
| | BL47 | BL47 | 6/27/01 | 0-2 in | 33 | 10 U | 42 | XRF |
| | BL48 | BL48 | 6/28/01 | 0-2 in | 39 | 10 | 96 | XRF |
| | BL49 | BL49A | 6/28/01 | 0-2 in | 62 | 10 U | 245 | XRF |
| | | BL49B | 6/28/01 | 2-4 in | 43 | 10 U | 28 | XRF |
| | BL50 | BL50A | 6/28/01 | 0-2 in | 187 | 47 | 1160 | XRF |
| | | BL50A | 6/28/01 | 0-2 in | 152 | 34 | 1062 | |
| | | BL50B | 6/28/01 | 2-4 in | 60 | 10 U | 64 | XRF |
| | BL52 | BL52 | 6/27/01 | 0-2 in | 15 | 10 U | 38 | XRF |

Notes:
All soil sample results are included in this table. All data averages as a function of soil depth are presented graphically in Appendix K.
U: Less than listed value (detection limit)
NA: Not applicable
All concentrations in milligrams per kilogram (mg/kg)
Depth in feet/inches below ground surface.

## Table 3-1. Risk-Based Concentrations of Potential Concern.

| Parameter | Surface Soil | | Groundwater | Surface Water | |
|---|---|---|---|---|---|
| | SAI-Ind(1) | SAI-Res(2) | MCL(3) | Human Health(4) | FW-Chronic (5) |
| | mg/kg | | mg/l | mg/l | |
| Arsenic | 200(6) | 20 | 0.05 | none | 0.190 |
| Cadmium | 410 | 120 | 0.005 | 0.01 | 0.002 |
| Chromium | 230,000(7) | 5,300 | 0.1 | 33(7) | 0.377(10) |
| Copper | 74,000 | 10,000 | 1.3(8) | none | 0.027 |
| Iron | none | none | 0.3(9) | none | None |
| Lead | 1,600(12) | 500 | 0.015(8) | none | 0.008 |
| Selenium | 9,200 | 1,300 | 0.05 | 0.104 | 0.005 |
| Zinc | 410,000 | 59,000 | 5.0(9) | none | 0.227 |
| Nitrates | NA | NA | 10 | none | NA(11) |

(1) SAI-Ind = Soil/Air and Ingestion Standard for Industrial Use. Maximum Concentration in Industrial Soil Considering Cross-media Contamination of Air and the Human Ingestion and Inhalation Pathways (mg/kg). From Implementation of the Existing Risk Reduction Rule, TNRCC, July 23, 1998, updated on April 7, 1999.

(2) SAI-Res = Soil/Air and Ingestion Standard for Residential Use. Maximum Concentration in Residential Soil Considering Cross-media Contamination of Air and the Human Ingestion and Inhalation Pathways (mg/kg). From Implementation of the Existing Risk Reduction Rule, TNRCC, July 23, 1998.

(3) Maximum Contaminant Level established under the federal Safe Drinking Water Act.

(4) Risk-based concentrations protective of human health from water consumption and fish ingestion.

(5) Fresh Water Chronic Criteria for protection of aquatic life. Uses a hardness of 250 mg/L for hardness dependent parameters and a Water Effect Ratio of 1.0. Derived per 30 TAC 307.6. In-stream standard to which mixing zones apply. Rio Grande is classified as "Limited" aquatic life habitat per 30 TAC 307.10.

(6) Cleanup level established by the Executive Director, TNRCC Interoffice Memo, Arsenic Soil Cleanup Standards, May 19, 1995, updated on April 7, 1999.

(7) Based on Chromium III.

(8) Lead and Copper Rule.

(9) Secondary MCL, unenforceable federal guideline regarding taste (copper and zinc) and staining of laundry (copper only).

(10) Trivalent form.

(11) Nutrient, excessive amounts of which may cause undesirable aquatic plant growth and reduce dissolved oxygen levels.

(12) Based on the application of default parameters contained in 30 TAC 350.76(c).

NA Not Applicable