ASARCO

1075815 - R8 SDMS

Linda Jacobson (3 Copies)
RCRA Project Manager
US EPA Region VIII
8ENF-T
1595 Wynkoop Street
Denver, Colorado 80202-1129

November 12, 2007

SENT BY CERTIFIED MAIL
RETURN RECEIPT REQUESTED

CONSENT DECREE
CIVIL ACTION NO. CV 98-3-H-CCL
EAST HELENA SITE
WORK PERFORMED IN OCTOBER 2007
PROGRESS REPORT #106

Dear Ms. Jacobson:

On May 5, 1998, Asarco and the United States Environmental Protection Agency (EPA) entered into a Consent Decree (Decree) to further the objectives of the Resource Conservation and Recovery Act (RCRA) and the Clean Water Act (CWA). Section XI of the Decree (Reporting: Corrective Action) requires Asarco to submit certified monthly progress reports to EPA which discuss the actions taken by Asarco in achieving compliance with the Decree. The reports are to be submitted to EPA no later than the twentieth (20th) day of the following month. The following describes only those activities that have occurred or are related to projects performed during October 2007. The historical actions taken by Asarco is achieving compliance with the Decree are contained in previous monthly progress reports.

a. Describe the actions, progress, and status of projects which have been undertaken pursuant to Part VII of the Decree;

The Idaho National Laboratory (INL) continues to work on creating the data interface and importing all collected data. The INL October 2007 progress report updated is attached to this monthly progress report. INL has advised Asarco that the October 2007 progress report represents their final such report, as funding for the projects concludes in early December 2007. The trailer and instrumentation are scheduled to be removed from the site in mid November 2007.

On October 1, 2007, Rick Wilkin (Ada Oklahoma Research Division) collected six slag samples from the East Helena plant slag pile. On October 24, 2007, Asarco obtained the slag sample splits and submitted the samples for the analysis set forth in EPA's October 4, 2007 electronic mail.

The RCRA Consent Decree annual public meeting took place on October 30, 2007 at 7:00 pm at the East Helena Volunteer Firehall. In accordance with Section IX of the Decree (Community Relations at East Helena), notices that announced the annual public meeting were published on October 21, 2006 and October 28, 2006 in the Sunday editions of the Helena Independent Record. An affidavit of publication is attached to this monthly progress report. An October 27, 2007 Independent Record newspaper article further publicized the October 30, 2007 public meeting. Asarco mailed more than 150 letters, announcing the public meeting, to interested parties. During the meeting, the Montana Department of Environmental Quality presented an update on 2007 cleaning and demolition project being conducted at the East Helena Plan. Numerous audience comments shared during and after Asarco's presentation applauded the complete and comprehensive nature of the discussion.

On November 1 and 2, 2007, Linda Jacobson (EPA, Region VIII, Denver Office) inspected the RCRA Consent Decree related projects at the East Helena Plant. During the November 1, 2007 inspection, Linda Jacobson was introduced to Geo-Con slurry wall construction personnel and was provided a complete description of the slurry wall construction process. Linda Jacobson viewed the slurry wall construction from a vantage point near the change house.

During the November 2, 2007 morning inspection, Linda Jacobson and Gayle Koch (Brattle Group) toured the Asarco East Helena facility. Gayle Koch focused her review on East Helena facility processes in which bankruptcy cost estimates will be prepared.

During the November 2, 2007 afternoon inspection, Linda Jacobson expressed her views on 1) the approved use of borrow material for mixing with bentonite and for use in back-filling the slurry wall trench, 2) the approved storage of slurry wall excavation material inside the slurry wall footprint, 3) American Chemet's underground injection well, 4) Asarco's potential application of a site-wide cap at the East Helena facility, 5) CERCLA ROD limits and water quality conditions for Lower Lake, and 6) cleaning and demolition of the blast furnace and Monier flue system. Linda Jacobson examined copies of the daily speiss-dross area slurry wall construction reports, observed the interior bases of the recently pressure-washed acid plant tail gas stack and sinter plant stack, observed the continuing construction of the speiss-dross slurry wall, and interviewed the Geo-Con site superintendent.

Interim Measures Work For 2007

In a June 13, 2007 letter, EPA approved Asarco's bench-scale permeable reactive barrier (PRB) media testing work plan. CDM's status update on the bench-scale PRB testing work plan is summarized below.

- A September 21, 2007 memorandum summarizing the results of the East Helena PRB Materials Testing - Jar Test Results.

- On October 19, 2007, CDM and Asarco discussed the results of the East Helena PRB Materials Testing - Jar Test Results. While there were several materials that adsorbed arsenic, only ZVI was deemed physically suitable for construction of a PRB wall. This was due to physical limitations of the other materials tested, mainly densities less than water, which would make construction of a wall below the water table problematic (material would float, or collapse under its own weight).

- Because ZVI was the only practical material to survive the jar test screening, and because EPA's pilot scale ZVI wall is already in the ground and ideally should be used as a site-specific basis for design of a full scale wall, it was decided to hold off on any further column testing. Asarco has contacted EPA's Office of Research and Development scientists conducting the pilot test to obtain more detailed performance data on this existing ZVI wall that would be useful for design.

On September 27, 2007, EPA approved the Design Plan for the Former Speiss-Dross Slurry Wall and its associated Monitoring, Operation, and Maintenance Work Plan. On October 23, 2007, Geo-Con completed mobilization and commenced construction of the slurry wall. As of the end of October 2007, Geo-Con has completed the pre-trenching and flow-filling of associated underground utilities, excavated approximately 480 feet of slurry wall, and backfilled with bentonite and borrow material approximately 180 feet of the slurry trench. As stated in the approved Work Plan (Section 3.2.9), on-site borrow soil was utilized in the slurry backfill mix to compensate for the anticipated lack of fines in the in-situ speiss-dross material required in the backfill mix. Although Asarco assumed that fifty percent or more of the excavated material would be <u>unsuitable</u> for slurry backfill mix, site conditions dictated that one hundred percent of the material was unsuitable thereby necessitating the need to exclusively utilize borrow material in the backfill mix. Geo-Cons reports that the preliminary results for the laboratory show soil-bentonite permeability of $3.4X10^{-8}$ and $3.9X10^{-8}$ cm/sec for the first two samples.

On October 26, 2007, Asarco provided EPA with electronic copies of 1) Geo-Con's statement of qualifications (previously provided in September 2007), 2) the general work plan for construction of the slurry wall (a revised October 31, 2007 work plan is attached to this monthly progress report), 3) submittal register, 4) health and safety plan, and 5) daily progress and quality control reports.

During October 2007, Hydrometrics collected groundwater-monitoring samples as prescribed under the 2007 Addendum to Interim Measures Work Plan, East Helena Facility, Former Speiss-Dross Slurry Wall Monitoring, Operation, and Maintenance Work Plan. A total of 21 samples were submitted to Energy Laboratories for analyses of common ions, dissolved metals, total metals, and arsenic speciation. The total number of samples included nine QA/QC samples (1-rinsate blank, DI-blank, and duplicate, per day). Two monitoring wells (DH-12, and DH-32) had insufficient water to sample. Groundwater monitoring

samples were collected at the following wells: DH-13, DH-18, DH-21, DH-27, DH-30, DH-31, DH-33, DH-34, DH-38, TW-1, SDMW-1, SDMW-2, SDMW-3, SDMW-4, and SDMW-5.

Based on EPA's comments, Asarco submitted the 2007 Interim Measures Addendum Work Plan - Speiss-Dross and Thaw House Areas, Soil Sampling, Excavation, Confirmatory Sampling and Interim Capping revised Work Plan on September 25, 2007. This revised Work Plan 1) describes the structures where excess soils are present, the structures past usage, material release information, and substructure utilities, 2) removes the demolition provisions contained in the September 12, 2007 Work Plan, 3) provides all SOP's relevant to the sampling activities, including specifics on XRF testing methods, 4) updates the size of certain figures, and 5) addresses underground utilities that may be encountered during excavation.

On October 10, 2007, Asarco, EPA, and the Montana Department of Environmental Quality participated in a scheduled conference call to discuss the September 25, 2007 Work Plan. Shortly after the discussion commenced, Linda Jacobson was disconnected from the conference call and despite several attempts, the connection was not re-established and the conference call was terminated. EPA followed the abbreviated conference call with e-mails that contained EPA's comments. On October 16, 2007, Asarco provided responses to EPA's October 9, 2007 draft comments and its October 10, 2007 e-mail. On October 17, 2007, Asarco provided further responses to EPA's comments. On October 29, 2007, EPA submitted an additional request for further information. During the on-site November 1, 2007 RCRA Consent Decree inspection of the East Helena facility, Asarco offered to respond to EPA latest Work Plan comments in a face-to-face discussion. The comments were not discussed during the EPA site inspection. EPA requested that responses be submitted in writing, which Asarco is providing in the following paragraph.

Asarco previously notified EPA that cleaning, demolition, and soil excavation of the main office had been completed on September 26, 2007. The notification advised EPA that the soil sampling plan outlined in the 2007 Interim Measures Addendum Work Plan - Speiss-Dross and Thaw House Areas, Soil Sampling, Excavation, Confirmatory Sampling and Interim Capping Work Plan would be conducted prior to backfilling the excavation hole with fumed slag. The collection of nine sub-surface soil samples from a single sample location in the main office area took place on September 29, 2007. In Asarco's September 2007 RCRA Consent Decree progress report, EPA was advised that the soil sampling within the thaw house area under the Work Plan would be conducted in October 2007. The collection of nine sub-surface samples from five separate sampling locations in the thaw house area took place on October 1, 2007. The main office and thaw house sampling was performed to acquire an understanding of sub-surface metal quality while awaiting EPA's approval of the Work Plan. The fifty-four soil samples collected from the main office and thaw house areas have been

submitted to Energy Laboratories for arsenic, cadmium, copper, lead, and zinc total metal analyses. Split soils samples from these same locations are being archived for future analysis pending approval of the Work Plan. EPA was previously advised that the main office excavation was backfilled with fumed slag. In October 2007, the thaw house area was backfilled with a thin veneer of fumed slag to achieve the proper drainage prior to placement of the interim cap.

On May 30, 2007, Asarco submitted the 2007 Interim Measures Work Plan Addendum - Blast Furnace Flue and Monier Flue Cleaning, Demolition, and Soil Sampling Work Plan. Asarco requested that EPA review the Work Plan and respond to Asarco's June 18, 2007 letter by identifying additional requirements to address EPA's concerns. EPA has not comments on either of these submittals. Following similar protocols for similar activities in the former speiss-dross area, Asarco prepared the 2007 Interim Measures Addendum Work Plan - Speiss-Dross and Thaw House Areas, Soil Sampling, Excavation, Confirmatory Sampling and Interim Capping Work Plan.

Asarco will soon be preparing plans for the cleaning and demolition activities scheduled for calendar year 2008. One of the areas being considered under this plan includes the cleaning, demolition, soil sampling, excavation, confirmatory sampling, and interim capping for the blast furnace flue and Monier flue. Asarco renews its request for EPA's review and approval of the September 25, 2007 Work Plan so that a blast furnace flue and Monier flue revised Work plan can be assembled.

Corrective Action Management Unit (CAMU)

Asarco has established the CAMU Phase 2 cell Trust Fund Agreement. On November 5, 2007, the trustee notified Asarco that the East Helena CAMU Trust account received a wire transfer of $4,353,110.50 from Asarco. On November 8, 2007, Asarco expressed mailed to Chuck Figur the complete executed original of the CAMU trust agreement. The completed financial assurance package for the CAMU Phase 2 cell is now in place.

In a letter dated September 5, 2007, EPA provided Asarco with clarification on CAMU technical comments and the approval process. On September 18, 2007, Asarco participated in a conference call with EPA and the Montana Department of Environmental Quality to discuss the preliminary comments on Asarco's August 21, 2007 submission. On October 3, 2007, Asarco amended the CAMU Phase 2 Cell Design Analysis Report by 1) updating the waste approval table, 2) reassembling the post-closure and monitoring requirements appendix, and 3) refined the parameter list for waste material destine for CAMU Phase 2 cell disposal. The Montana Department of Environmental Quality has communicated that no further CAMU Phase 2 cell technical comments will be forthcoming from the Solid and Hazardous Waste Bureau. Asarco requests EPA's review and written approval of the CAMU Phase 2 cell design analysis report.

On September 4, 2007, Asarco received EPA's August 30, 2007 letter that grants Asarco an extension until spring 2008 for the storage of existing hazardous wastes and the additional hazardous wastes and solid wastes to be generated during the demolition and corrective action activities during 2007 and early 2008. On September 11, 2007, Asarco submitted a letter to EPA requesting that the extension continue until July 30, 2008. Asarco awaits EPA's response to this request.

RI/FS Long-Term Monitoring Program

During October 2007, Hydrometrics initiated the semi-annual sampling prescribed in the Long-Term RI/FS Monitoring Program. On October 31, 2007, surface water samples were obtained at six sites (Lower Lake, PPC-3A, PPC-5, PPC-7, PPC-8, and PPC-103). These samples were submitted to Energy Laboratories for analysis of common ions, and dissolved and total metals. Water levels were collected from 112 well on November 1, 2007. Water levels could not be obtained from ten wells (DH-21, DH-27, DH-30, DH-31, DH-33, DH-34, DH-35, DH-37, DH-38, and TW-1) as the speiss-dross slurry wall construction project has limited access to this area.

The groundwater-monitoring program set forth in the Long-Term RI/FS Monitoring Program is scheduled to take place from November 12, 2007 to December 7, 2007. Ground water monitoring samples will be collected at wells identified in Table 1 (Long-Term Semi-Annual Monitoring Program For East Helena – 2007) and for the parameters listed in Table 7 (Well Sampling Supplemental Metal Parameter List - November 2007 only). The monitoring will include obtaining field parameters and collecting samples to be submitted to Energy Laboratories for analysis of common ions, dissolved metals, and arsenic and selenium speciation. In addition to the above analyses, monitoring wells that are associated with the 1) 2007 Former Acid Plant Sediment Drying Area Monitoring, Operations and Maintenance Work Plan and 2) 2007 Interim Measures Addendum, Former Speiss-Dross Area Slurry Wall Monitoring, Operations and Maintenance Work Plan will be analyzed for total metals. Hydrometrics will collect two split sample sets for dissolved metals at the following sites: EH-114, EH-116, EH-113, EH-112, EH-106, EH-111, EH-115, DH-64, EH-101, EH-52, EH-54, DH-52, EH-58, DH-34, EH-102, EH-59, EH-117, DH-15, DH-6, DH-10A, DH-53, DH-7, DH-65, DH-56, DH-55, DH-11, DH-14, DH-5, DH-4. The split sample sets will be stored in Hydrometrics sample storage refrigerators until all of the samples are collected. The spilt samples sets will be submitted to EPA's laboratory in Denver, Colorado and to EPA's Office of Research and Development (ORD) office in Ada, Oklahoma.

During September 2007, Asarco completed the bi-monthly sampling of groundwater monitoring wells and the monthly sampling of select residential well, as prescribed in Asarco's on-going Post Remedial Investigation (RI)/Feasibility Study (FS), Long Term Monitoring Program (April 2007). On October 8, 2007, groundwater well samples were obtained from the Nordstrom, Jensen, Jones, and Foley groundwater wells. Copies of the September 2007 and

October 2007 residential well notification cover letters, along with the respective laboratory analytical reports, have been attached to this monthly progress report.

A summary of the correspondence transmitted as part of the East Helena Consent Decree in October 2007 is included in Attachment 1.

b. Identify any requirements under the Part VII of the Decree that were not completed in a timely manner, and problems or anticipated problem areas affecting compliance with the Decree;

During the cleaning and demolition activities within the former speiss-dross area, monitoring well DH-30 was damaged. Hydrometrics personnel performed repairs to well DH-30 by replacing and/or repairing the PVC and steel casings approximately two feet below the ground surface to approximately three feet above the ground surface. There were no additional requirements that were not completed in a timely manner nor were there problems or anticipated problem areas that affect compliance with the Decree.

c. Describe projects completed during the prior month, as well as activities scheduled for the next month;

In accordance with the 1) 2006 Interim Measures Work Plan Addendum, Final Cleaning, Soil Sampling, Backfilling, and Interim Cap Work Plan and 2) 2006 Interim Measures Work Plan Addendum, Former Acid Plant Sediment Drying Area Slurry Wall, Monitoring, Operation, and Maintenance Work Plan, four areas in which interim caps have been installed are being inspected on a monthly basis with the most recent inspections occurring on October 2, 2007. These monthly inspections documented the condition of the interim caps. The interim cap covering the former speiss-dross plant area has been completely removed to1) accommodate the cleaning and demolition of the dross plant baghouse and 200-foot stack and 2) facilitate the construction of the speiss-dross slurry wall.

CAMU Landfill - In accordance with the July 2000 CAMU Design Analysis Report (Operation and Maintenance Plan), the CAMU is being inspected monthly with the last inspection occurring on October 5, 2007. This monthly inspection documented the condition of the CAMU.

During November 2007, Asarco is scheduled to conduct the monthly and semi-annual sampling prescribed in the Post Remedial Investigation (RI)/Feasibility Study (FS), Long Term Monitoring Program (April 2007). Under this program, 1) the monthly sampling irrigation and residential groundwater wells are scheduled to take place and 2) the semi-annual sampling of groundwater monitoring wells is scheduled to commence. See section a. of this monthly progress report for a full description of these sampling events. Asarco contractor (Geo-Con) is scheduled to continue with the construction of the speiss-dross

slurry wall and install the interim cap within the former speiss-dross area in November 2007.

d. Describe and estimate the percentage of studies completed;

The Pump and Treat Pilot Scale Testing for Source Area Reduction of Groundwater Contamination is approximately 100% complete.

The jar testing (Phase I) of the East Helena PRB Materials Testing Program is 100% complete.

The slurry wall construction in the former acid plant sediment drying area is 100% complete.

The interim capping project for the former acid plant sediment drying area, dross area, sinter plant area, and gas cleaning section of the acid plant is 100% complete

The revised May 2007 CAMU Phase 2 Cell design analyses and revised versions of the CAMU Phase 2 Cell cost schedule are 100% complete.

e. Describe and summarize all findings to date;

The details of past findings through September 2007 are described and summarized in previous monthly progress reports.

f. Describe actions being taken to address problems;

There were no actions required to address problems associated with the Decree.

g. Identify changes in key personnel during the period;

Asarco continues to use the services of Asarco technical personnel and Hydrometrics Incorporated to perform the various activities required under the Consent Decree.

h. Include copies of the results of sampling and tests conducted and other data generated pursuant to work performed under Part VII of the Decree since the last Progress Report. Asarco may submit data that has been validated and confirmed by Asarco to supplement any prior submitted data. Updated validated and confirmed data shall be included with the RFI Report, if not delivered before;

Two validation packages, entitled "*Validation Summary, Asarco East Helena Post RI/FS Long-Term Monitoring Program, East Helena Residential Groundwater, Inorganic Analyses, September 2007*" and "*Validation Summary, Asarco East Helena Interim Measures Post RI/FS Long-Term Monitoring Project,*

Groundwater and CAMU Wells, Bi-monthly Sample Event, Inorganic and Organic Analyses, September 2007" are attached to this monthly progress report.

In two e-mail communications (October 30, 2007 and November 1, 2007), Bob Miller provided Linda Jacobson with 1) a groundwater monitoring results fact sheet, 2) a summary of the groundwater selenium speciation data, 3) potentiometric maps that illustrate the effectiveness of the former acid plant sediment drying area slurry wall, 4) residential well sampling data from September 2006 through September 2007, 5) an expansion of EPA split data to include Energy laboratory data for selenium, arsenic, chloride, iron, and sulfate, 6) a summary of residential well sampling data for arsenic and selenium, 7) selenium data for groundwater monitoring well locations from March 2007 through September 2007, 8) residential groundwater well sampling data for selected analytes and dates, and 9) all residential well sampling data from September 2006 through September 2007.

i. **Describe the status of financial assurance mechanisms, including whether any changes have occurred, or are expected to occur which might affect them, and the status of efforts to bring such mechanisms back into compliance with the requirements of this Decree.**

ASARCO filed a voluntary petition for relief under chapter 11 of Title 11 of the United States Bankruptcy Code in the Southern District of Texas on August 9, 2005. ASARCO hopes to use its chapter 11 bankruptcy proceeding to improve its financial position to the point where it can successfully reorganize and immerge from bankruptcy. ASARCO further hopes that at that time it will be in a position to make the required financial assurance demonstration. See section a. of this monthly progress report for a discussion of the financial assurance for the CAMU project at the East Helena site.

Sincerely,

Jon Nickel

Jon Nickel

CERTIFICATION
PURSUANT TO U.S. v ASARCO INCORPORATED
(CV-98-3-H-CCL, USDC, D. Montana)

I certify under penalty of law that this document, October 2007 Progress Report and all attachments, were prepared under my direct supervision in accordance with a system designed to assure that qualified personnel gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

Signature_____
Name: Thomas L. Aldrich
Title: Vice President Environmental Affairs
Date: November 8, 2007

CONSENT DECREE
EAST HELENA SITE
OCTOBER 2007 PROGRESS REPORT

SUMMARY OF CORRESPONDENCE
ATTACHMENT 1

DATE OF TRANSMITTAL	CORRESPONDENCE SENT FROM	CORRESPONDENCE SENT TO	SUBJECT	RESPONSE
Attached to This Monthly Progress Report	Jon Nickel	Linda Jacobson	INL PRB Testing Update (October 2007)	No Formal Response Required
Attached to This Monthly Progress Report	Jon Nickel	Linda Jacobson	Affidavit of Publication - RCRA Annual Public Meeting	No Formal Response Required
October 26, 2007	Bob Miller	Linda Jacobson	Geo-Con's statement of qualifications, the general work plan for construction of the slurry wall, submittal register, health and safety plan, and daily progress and quality control reports.	No Formal Response Required
November 8, 2007	Jon Nickel	Chuck Figur	Complete Executed Original of CAMU Trust Agreement	Awaiting EPA Written Approval of CAMU Design Analysis Plan
Attached to This Monthly Progress Report	Jon Nickel	Linda Jacobson	Validation Summary, Asarco East Helena Post RI/FS Long-Term Monitoring Program, East Helena Residential Groundwater, Inorganic Analyses, September 2007	No Formal Response Required

Attached to This Monthly Progress Report	Jon Nickel	Linda Jacobson	Residential Well Notification Letters	No Formal Response Required
Attached to This Monthly Progress Report	Jon Nickel	Linda Jacobson	Validation Summary, Asarco East Helena Interim Measures Post RI/FS Long-Term Monitoring Project, Groundwater and CAMU Wells, Bi-monthly Sample Event, Inorganic and Organic Analyses, September 2007	No Formal Response Required
October 30, 2007 and November 1, 2007	Bob Miller	Linda Jacobson	Groundwater monitoring results fact sheet, summary of the groundwater selenium speciation data, potentiometric maps, residential well sampling data from September 2006 through September 2007, EPA split data to include Energy laboratory data for selenium, arsenic, chloride, iron, and sulfate, summary of residential well sampling data for arsenic and selenium, selenium data for groundwater monitoring well locations from March 2007 through September 2007, residential groundwater well sampling data for selected analytes and dates, and all residential well sampling data from September 2006 through September 2007.	No Formal Response Required

October 2007 RCRA Consent Decree Progress Report

Affidavit of Publication

AFFIDAVIT OF PUBLICATION
STATE OF MONTANA,

County of Lewis & Clark,

Beverly Allison

Being duly sworn, deposes and says:

That she is the principal clerk of the Independent Record a newspaper of general circulation published daily in the City of Helena, in the County of Lewis & Clark, State of Montana, and has charge of the advertisement thereof:

That the Public Notice

a true copy of which is hereto annexed, was published in said newspaper on the following dates: viz.: October 21, 28, 2007

making in all 2 publication(s).

Beverly G Allison

Subscribed and sworn to before me this 29 day of October, 2007.

Rose Marie Farr

NOTARY PUBLIC for the State of Montana
Printed Name: Rose Marie Farr
Residing at Helena, Montana
My commission expires 8-15-2010

(NOTARIAL SEAL)

PUBLIC NOTICE

A public meeting will be held Tuesday, October 3 2007 at 7:00 pm at the City of East Helena Volunte Firehall located on 4 East Pacific Street in East He na. During the meeting ASARCO representatives provide the public with an update regarding the p cess of implementing the East Helena Consent cree, CV 98-3-H-CCL. The public will be provi with an update on the most recent monitoring resu the remedial actions that are taking place, an schedule for future activities. United States Envi mental Protection Agency (EPA) representatives participate in the discussions. There will be an op tunity for the public to ask questions. Asarco EPA encourage all East Helena residents to at this informative meeting.

October 21, 28, 2007

October 2007 RCRA Consent Decree Progress Report

INL PRB Testing Update - October 2007

October 31, 2007

Progress for October, 2007
Asarco PRB, Helena

Autonomous data collection continued throughout the month of October. Data continues to be collected using single well Wenner arrays and 3-D data across multiple wells. Figure 1a is an ERT cross-section image of borehole NWN (located in the center of the barrier) taken with .375 meter electrode separations and plotted as the change in resistivity from a 1 Hz background image taken on December 06, 2006 to October 11, 2007. Figure 1b is the corresponding 1 Hz data plotted on a monthly basis from September 22, 2006 to October 14, 2007. These data show that in the upper portion of the borehole, the resistivity values are very low; some are below .5 Ohm m. The lower portion of the barrier remains highly resistive, but these values continue to decrease. Although the changes are small they are perceptible.

Figure 2 shows three-dimensional ERT images of the barrier plotted using the same background data in Figure 1a. The large blue area in the figure indicates the upper portion of the permeable reactive barrier (PRB) and shows small but continuing changes from September to October. In the lower portion, the change in resistivity is evident by the decreased size of the red area from one month to the next. There are apparent changes outside the barrier region but these do not show a consistent pattern from month to month.

In mid-November, Multi-Phase Technologies will be removing their equipment and completing data collection at the Asarco barrier site, as project funding will end in early December. Please contact Doug LaBrecque at dlabrecque@mpt3d.com or Paula Adkins at padkins@mpt3d.com if you have any questions or would like additional information.

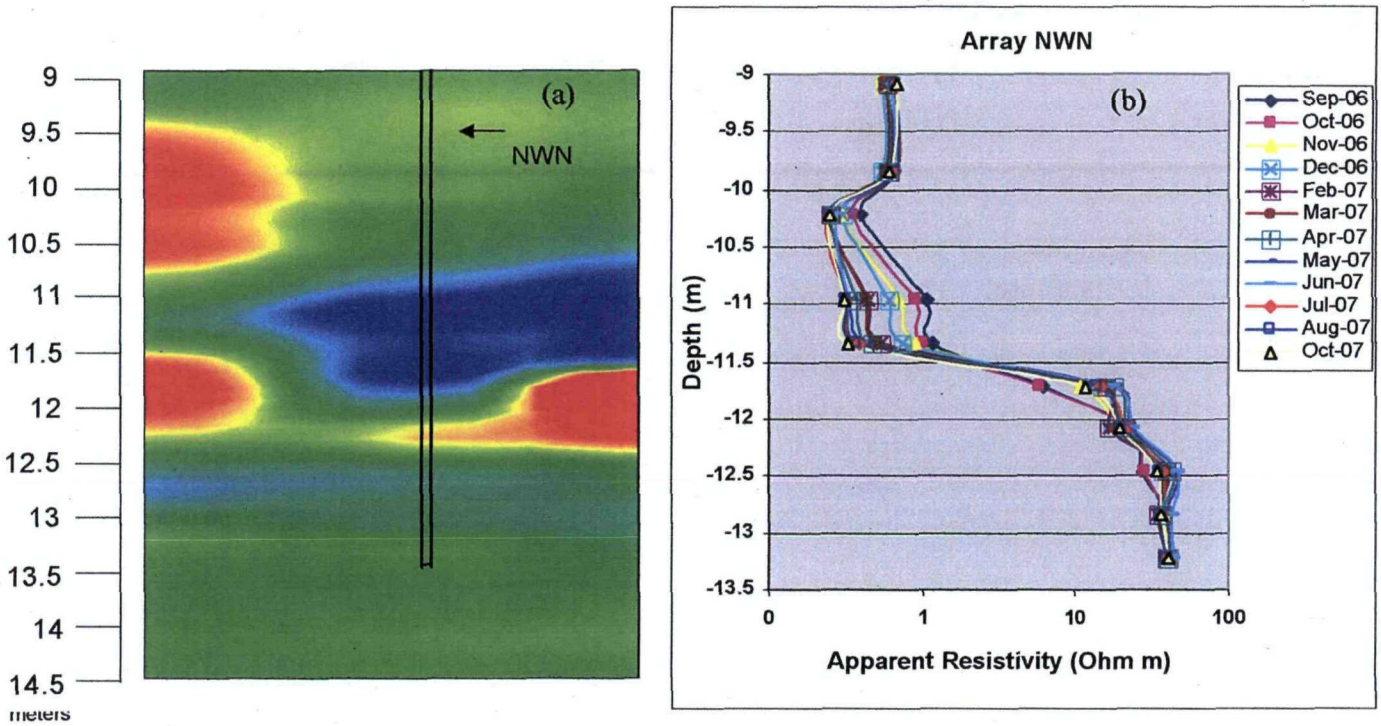
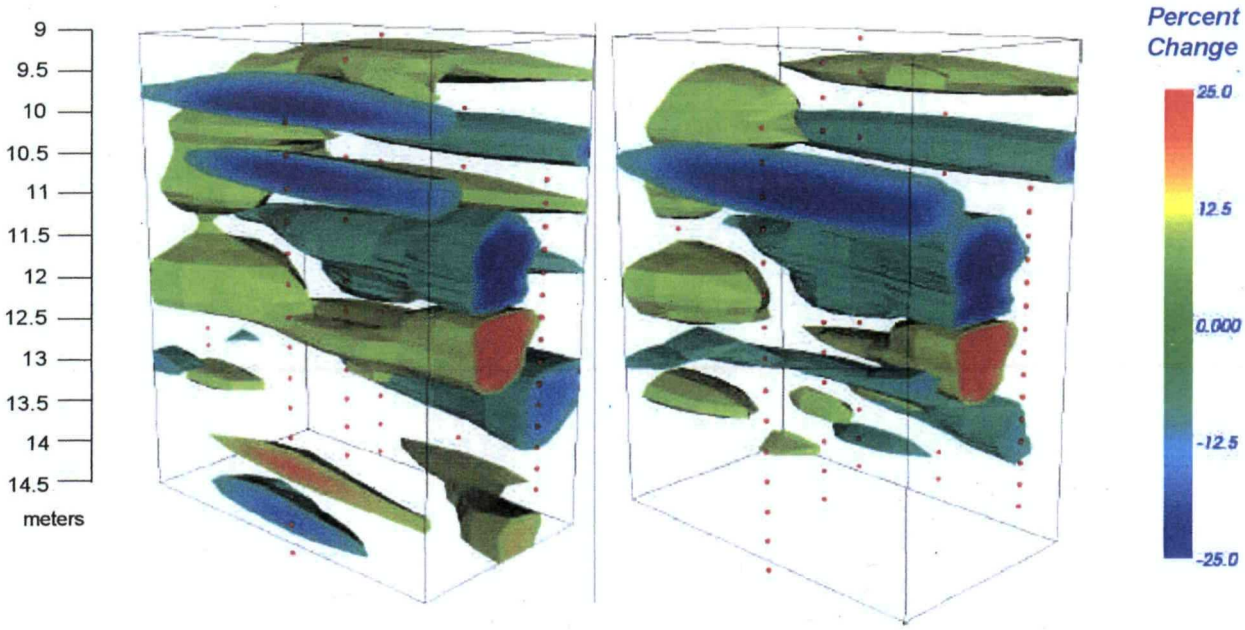


Figure 1. Change in apparent resistivity of the East Helena barrier. Figure 1a is an ERT cross-sectional image showing the location of array NWN and is plotted as the change in resistivity from a background image taken on December 06, 2006 to October 11, 2007. Figure 1b is the corresponding data plotted on a monthly basis from September 22, 2006 to October 14, 2007.



September, 2007 October, 2007

Figure 2. 3-D ERT views of resistivity as percent change from background data taken at 1 Hz on December 06, 2006. The view at left is from September, 2007 and on the right from October, 2007. The large blue area represents the upper portion of the barrier and shows very little change in resistivity. The decrease in size of the red area in the lower portion represents a decrease in resistivity.

ASARCO

October 23, 2007

John and Tova Jones
5875 Rosendale
East Helena, Montana 59635

Dear Mr. and Mrs. Jones:

Enclosed are the analytical results for the water samples that were collected from your irrigation groundwater well located at 301 Gail Street on September 27, 2007. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The sampling results for your well show that your water quality meets all Montana Human Health Standards for the constituents sampled with the exception of total dissolved selenium, which was detected at concentrations of 0.318 mg/L. This concentration exceeds the level of 0.050 mg/L that have been deemed acceptable for drinking water supplied by public drinking water systems known as the Montana Human Health Standard and the Federal Maximum Contaminant Level (MCL)/Action Level for selenium. In addition, the total dissolved arsenic was detected at 0.006 mg/L. The Montana Human Health Standard and the Federal Maximum Contaminant Level (MCL)/Action Level for arsenic is 0.010 mg/L.

These recent water quality results are consistent with the July and August 2007 monitoring data from your site. Based on State of Montana and EPA water quality standards, the water from this well should **not** be used as a drinking water source, since the selenium concentration in your irrigation groundwater well is not considered acceptable for public drinking water supplies.

I have sampled your irrigation well water in October 2007 and will be sampling your irrigation well water again in November 2007. If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

Jon Nickel

Jon Nickel

Enclosures
Cc: Bob Miller
Tom Aldrich

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 3161 East Lyndale Ave. • Helena, MT 59604
877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007
Lab ID: H07090318-003
Client Sample ID: EHR-302

Jones Residence
301 Gail Street

Report Date: 10/15/07
Collection Date: 09/27/07 08:45
DateReceived: 09/27/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	10/01/07 12:21 / abb
Conductivity	1470	umhos/cm		1		A2510 B	10/03/07 10:18 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/02/07 15:13 / kjw
Solids, Total Dissolved TDS @ 180 C	1200	mg/L		10		A2540 C	10/02/07 15:35 / kjw
INORGANICS							
Sulfate	657	mg/L	D	6		A4500-SO4 E	10/09/07 15:31 / abb
Alkalinity, Total as CaCO3	140	mg/L		1		A2320 B	10/01/07 12:28 / abb
Bicarbonate as HCO3	170	mg/L		1		A2320 B	10/01/07 12:28 / abb
Chloride	52	mg/L		1		A4500-Cl C	10/05/07 08:47 / sld
METALS, DISSOLVED							
Arsenic	0.006	mg/L		0.002		E200.8	10/10/07 20:05 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/10/07 20:05 / eli-b
Calcium	160	mg/L		1		E200.7	10/01/07 23:37 / eli-b
Copper	0.006	mg/L		0.004		E200.8	10/10/07 20:05 / eli-b
Iron	0.09	mg/L		0.02		E200.7	10/01/07 23:37 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/10/07 20:05 / eli-b
Magnesium	33	mg/L		1		E200.7	10/01/07 23:37 / eli-b
Manganese	ND	mg/L		0.01		E200.7	10/01/07 23:37 / eli-b
Potassium	8	mg/L		1		E200.7	10/01/07 23:37 / eli-b
Selenium	0.318	mg/L		0.005		E200.8	10/10/07 20:05 / eli-b
Sodium	129	mg/L		1		E200.7	10/01/07 23:37 / eli-b
Zinc	ND	mg/L		0.01		E200.7	10/01/07 23:37 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

ASARCO

October 23, 2007

David Jensen
P. O. Box 1021
401 Gail Street
East Helena, Montana 59635

Dear Mr. Jensen:

Enclosed are the analytical results for the water samples (original and duplicate) that were collected from your ground water well on September 27, 2007. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The water quality of your well is good with near neutral pH and low levels of total dissolved solids and metals. The tested water quality parameters of the well for the constituents samples are better than the Montana Human Health Standards and Federal Maximum Concentration Limits (MCL)/Action Levels. These recent water quality results are consistent with previous monitoring data from your site and do not indicate significant changes from historical baseline data.

If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

Jon Nickel

Jon Nickel

Enclosure

Cc: Tom Aldrich
Bob Miller

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LABORATORY ANALYTICAL REPORT

Client:	Asarco LLC	Report Date:	10/15/07
Project:	Monthly RI/FS Long Term Monitoring September 2007	Collection Date:	09/27/07 08:20
Lab ID:	H07090318-001	DateReceived:	09/27/07
Client Sample ID:	EHR-0907-300 Jensen Residence (Original) 401 Gail Street	Matrix:	Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.1	s.u.		0.1		A4500-H B	10/01/07 12:07 / abb
Conductivity	761	umhos/cm		1		A2510 B	10/03/07 10:15 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/02/07 15:12 / kjw
Solids, Total Dissolved TDS @ 180 C	569	mg/L		10		A2540 C	10/02/07 15:34 / kjw
INORGANICS							
Sulfate	285	mg/L	D	3		A4500-SO4 E	10/09/07 15:55 / abb
Alkalinity, Total as CaCO3	130	mg/L		1		A2320 B	10/01/07 12:11 / abb
Bicarbonate as HCO3	160	mg/L		1		A2320 B	10/01/07 12:11 / abb
Chloride	33	mg/L		1		A4500-Cl C	10/05/07 08:42 / sld
METALS, DISSOLVED							
Arsenic	0.003	mg/L		0.002		E200.8	10/10/07 19:19 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/10/07 19:19 / eli-b
Calcium	96	mg/L		1		E200.7	10/01/07 23:10 / eli-b
Copper	ND	mg/L		0.004		E200.8	10/10/07 19:19 / eli-b
Iron	0.09	mg/L		0.02		E200.7	10/01/07 23:10 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/10/07 19:19 / eli-b
Magnesium	21	mg/L		1		E200.7	10/01/07 23:10 / eli-b
Manganese	0.02	mg/L		0.01		E200.7	10/01/07 23:10 / eli-b
Potassium	6	mg/L		1		E200.7	10/01/07 23:10 / eli-b
Selenium	0.020	mg/L		0.005		E200.8	10/10/07 19:19 / eli-b
Sodium	23	mg/L		1		E200.7	10/01/07 23:10 / eli-b
Zinc	0.03	mg/L		0.01		E200.7	10/01/07 23:10 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007
Lab ID: H07090318-002
Client Sample ID: EHR-301

Jensen Residence (Duplicate)
401 Gail Street

Report Date: 10/15/07
Collection Date: 09/27/07 08:30
DateReceived: 09/27/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	10/01/07 12:14 / abb
Conductivity	756	umhos/cm		1		A2510 B	10/03/07 10:17 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/02/07 15:12 / kjw
Solids, Total Dissolved TDS @ 180 C	573	mg/L		10		A2540 C	10/02/07 15:35 / kjw
INORGANICS							
Sulfate	276	mg/L	D	3		A4500-SO4 E	10/09/07 15:56 / abb
Alkalinity, Total as CaCO3	130	mg/L		1		A2320 B	10/01/07 12:19 / abb
Bicarbonate as HCO3	160	mg/L		1		A2320 B	10/01/07 12:19 / abb
Chloride	33	mg/L		1		A4500-Cl C	10/05/07 08:44 / sld
METALS, DISSOLVED							
Arsenic	0.003	mg/L		0.002		E200.8	10/10/07 19:27 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/10/07 19:27 / eli-b
Calcium	97	mg/L		1		E200.7	10/01/07 23:29 / eli-b
Copper	ND	mg/L		0.004		E200.8	10/10/07 19:27 / eli-b
Iron	0.09	mg/L		0.02		E200.7	10/01/07 23:29 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/10/07 19:27 / eli-b
Magnesium	21	mg/L		1		E200.7	10/01/07 23:29 / eli-b
Manganese	0.02	mg/L		0.01		E200.7	10/01/07 23:29 / eli-b
Potassium	6	mg/L		1		E200.7	10/01/07 23:29 / eli-b
Selenium	0.022	mg/L		0.005		E200.8	10/10/07 19:27 / eli-b
Sodium	23	mg/L		1		E200.7	10/01/07 23:29 / eli-b
Zinc	0.03	mg/L		0.01		E200.7	10/01/07 23:29 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

ASARCO

October 23, 2007

Mrs. Louise Nordstrom
P. O. Box 601
109 Gail Street
East Helena, Montana 59635

Dear Mrs. Nordstrom:

Enclosed are the analytical results for the irrigation water samples that were collected from your groundwater well on September 27, 2007. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The water quality of your well is good with near neutral pH and low levels of total dissolved solids and metals. The tested water quality parameters of the well for the constituents sampled are better than all Montana Human Health Standards. These recent water quality results are consistent with previous monitoring data from your site and do not indicate significant changes from historical baseline data.

If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

Jon Nickel

Jon Nickel

Enclosure
Cc: Bob Miller
Tom Aldrich

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007
Lab ID: H07090318-005
Client Sample ID: EHR-304 Nordstrom Residence 109 Gail Street

Report Date: 10/15/07
Collection Date: 09/27/07 09:30
DateReceived: 09/27/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	10/01/07 12:50 / abb
Conductivity	294	umhos/cm		1		A2510 B	10/03/07 10:21 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/02/07 15:14 / kjw
Solids, Total Dissolved TDS @ 180 C	187	mg/L		10		A2540 C	10/02/07 15:36 / kjw
INORGANICS							
Sulfate	53	mg/L		1		A4500-SO4 E	10/09/07 15:32 / abb
Alkalinity, Total as CaCO3	82	mg/L		1		A2320 B	10/01/07 12:54 / abb
Bicarbonate as HCO3	100	mg/L		1		A2320 B	10/01/07 12:54 / abb
Chloride	6	mg/L		1		A4500-Cl C	10/05/07 08:50 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	10/10/07 20:21 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/10/07 20:21 / eli-b
Calcium	31	mg/L		1		E200.7	10/01/07 23:44 / eli-b
Copper	ND	mg/L		0.004		E200.8	10/10/07 20:21 / eli-b
Iron	0.03	mg/L		0.02		E200.7	10/01/07 23:44 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/10/07 20:21 / eli-b
Magnesium	6	mg/L		1		E200.7	10/01/07 23:44 / eli-b
Manganese	ND	mg/L		0.01		E200.7	10/01/07 23:44 / eli-b
Potassium	3	mg/L		1		E200.7	10/01/07 23:44 / eli-b
Selenium	ND	mg/L		0.005		E200.8	10/10/07 20:21 / eli-b
Sodium	12	mg/L		1		E200.7	10/01/07 23:44 / eli-b
Zinc	ND	mg/L		0.01		E200.7	10/01/07 23:44 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

ASARCO

November 2, 2007

Pat Foley
203 Gail Street
P. O. Box 1551
East Helena, Montana 59635

Dear Mr. Foley:

Enclosed are the analytical results for the water samples (both original and duplicate) that were collected from the 203 Gail Street ground water well on October 8, 2007. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The water quality of your well is good with near neutral pH and low levels of total dissolved solids and metals. The tested water quality parameters of the well for the constituents sampled are better than the Montana Human Health Standards and Federal Maximum Contaminant Level (MCL)/Action Levels. These recent water quality results are consistent with previous monitoring data from your site and do not indicate significant changes from historical baseline data.

If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

Jon Nickel

Jon Nickel

Enclosure

Cc: Bob Miller
Tom Aldrich

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring October 2007
Lab ID: H07100105-002
Client Sample ID: EHR-1007-301

Foley Residence (Original)
203 Gail Street

Report Date: 10/30/07
Collection Date: 10/08/07 12:25
DateReceived: 10/08/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.1	s.u.		0.1		A4500-H B	10/10/07 09:11 / sld
Conductivity	272	umhos/cm		1		A2510 B	10/14/07 12:48 / sld
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/14/07 21:09 / sld
Solids, Total Dissolved TDS @ 180 C	181	mg/L		10		A2540 C	10/14/07 20:58 / sld
INORGANICS							
Sulfate	55	mg/L		1		A4500-SO4 E	10/11/07 15:35 / abb
Alkalinity, Total as CaCO3	78	mg/L		1		A2320 B	10/15/07 13:20 / abb
Bicarbonate as HCO3	95	mg/L		1		A2320 B	10/15/07 13:20 / abb
Chloride	5	mg/L		1		A4500-Cl C	10/15/07 10:51 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	10/16/07 04:11 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/16/07 04:11 / eli-b
Calcium	29	mg/L		1		E200.7	10/11/07 14:50 / eli-b
Copper	0.015	mg/L		0.004		E200.8	10/16/07 04:11 / eli-b
Iron	0.04	mg/L		0.02		E200.7	10/11/07 14:50 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/16/07 04:11 / eli-b
Magnesium	6	mg/L		1		E200.7	10/11/07 14:50 / eli-b
Manganese	ND	mg/L		0.01		E200.7	10/11/07 14:50 / eli-b
Potassium	2	mg/L		1		E200.7	10/11/07 14:50 / eli-b
Selenium	ND	mg/L		0.005		E200.8	10/17/07 03:55 / eli-b
Sodium	13	mg/L		1		E200.7	10/11/07 14:50 / eli-b
Zinc	ND	mg/L		0.01		E200.8	10/16/07 04:11 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring October 2007
Lab ID: H07100105-003
Client Sample ID: EHR-1007-302 Foley Residence (Duplicate) 203 Gail Street

Report Date: 10/30/07
Collection Date: 10/08/07 12:25
DateReceived: 10/08/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.1	s.u.		0.1		A4500-H B	10/10/07 09:12 / sld
Conductivity	273	umhos/cm		1		A2510 B	10/14/07 12:48 / sld
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/14/07 21:09 / sld
Solids, Total Dissolved TDS @ 180 C	182	mg/L		10		A2540 C	10/14/07 20:58 / sld
INORGANICS							
Sulfate	52	mg/L		1		A4500-SO4 E	10/11/07 15:35 / abb
Alkalinity, Total as CaCO3	79	mg/L		1		A2320 B	10/15/07 13:23 / abb
Bicarbonate as HCO3	96	mg/L		1		A2320 B	10/15/07 13:23 / abb
Chloride	5	mg/L		1		A4500-Cl C	10/15/07 10:52 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	10/16/07 04:19 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/16/07 04:19 / eli-b
Calcium	28	mg/L		1		E200.7	10/11/07 14:58 / eli-b
Copper	0.015	mg/L		0.004		E200.8	10/16/07 04:19 / eli-b
Iron	0.05	mg/L		0.02		E200.7	10/11/07 14:58 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/16/07 04:19 / eli-b
Magnesium	6	mg/L		1		E200.7	10/11/07 14:58 / eli-b
Manganese	ND	mg/L		0.01		E200.7	10/11/07 14:58 / eli-b
Potassium	2	mg/L		1		E200.7	10/11/07 14:58 / eli-b
Selenium	ND	mg/L		0.005		E200.8	10/17/07 04:02 / eli-b
Sodium	13	mg/L		1		E200.7	10/11/07 14:58 / eli-b
Zinc	ND	mg/L		0.01		E200.8	10/16/07 04:19 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

ASARCO

November 2, 2007

John and Tova Jones
5875 Rosendale
East Helena, Montana 59635

Dear Mr. and Mrs. Jones:

Enclosed are the analytical results for the water samples that were collected from your irrigation groundwater well located at 301 Gail Street on October 8, 2007. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The sampling results for your well show that your water quality meets all Montana Human Health Standards for the constituents sampled with the exception of total dissolved selenium, which was detected at concentrations of 0.293 mg/L. This concentration exceeds the level of 0.050 mg/L that have been deemed acceptable for drinking water supplied by public drinking water systems known as the Montana Human Health Standard and the Federal Maximum Contaminant Level (MCL)/Action Level for selenium. In addition, the total dissolved arsenic was detected at 0.005 mg/L. The Montana Human Health Standard and the Federal Maximum Contaminant Level (MCL)/Action Level for arsenic is 0.010 mg/L.

These recent water quality results are consistent with the July, August, and September 2007 monitoring data from your site. Based on State of Montana and EPA water quality standards, the water from this well should **not** be used as a drinking water source, since the selenium concentration in your irrigation groundwater well is not considered acceptable for public drinking water supplies.

I will be sampling your irrigation well water again in November 2007. If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

Jon Nickel

Jon Nickel

Enclosures
Cc: Bob Miller
Tom Aldrich

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring October 2007
Lab ID: H07100105-005
Client Sample ID: EHR-1007-304 Jones Residence 301 Gail Street

Report Date: 10/30/07
Collection Date: 10/08/07 13:00
DateReceived: 10/08/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	10/10/07 09:18 / sld
Conductivity	1440	umhos/cm		1		A2510 B	10/14/07 12:50 / sld
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/14/07 21:09 / sld
Solids, Total Dissolved TDS @ 180 C	1190	mg/L		10		A2540 C	10/14/07 20:58 / sld
INORGANICS							
Sulfate	689	mg/L	D	6		A4500-SO4 E	10/11/07 15:36 / abb
Alkalinity, Total as CaCO3	140	mg/L		1		A2320 B	10/15/07 13:54 / abb
Bicarbonate as HCO3	180	mg/L		1		A2320 B	10/15/07 13:54 / abb
Chloride	52	mg/L		1		A4500-Cl C	10/15/07 11:02 / sld
METALS, DISSOLVED							
Arsenic	0.005	mg/L		0.002		E200.8	10/16/07 04:34 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/16/07 04:34 / eli-b
Calcium	154	mg/L		1		E200.7	10/11/07 15:05 / eli-b
Copper	0.006	mg/L		0.004		E200.8	10/16/07 04:34 / eli-b
Iron	0.06	mg/L		0.02		E200.7	10/11/07 15:05 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/16/07 04:34 / eli-b
Magnesium	32	mg/L		1		E200.7	10/11/07 15:05 / eli-b
Manganese	ND	mg/L		0.01		E200.7	10/11/07 15:05 / eli-b
Potassium	7	mg/L		1		E200.7	10/11/07 15:05 / eli-b
Selenium	0.293	mg/L		0.005		E200.8	10/17/07 04:18 / eli-b
Sodium	132	mg/L		1		E200.7	10/11/07 15:05 / eli-b
Zinc	ND	mg/L		0.01		E200.8	10/16/07 04:34 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

ASARCO

November 2, 2007

David Jensen
P. O. Box 1021
401 Gail Street
East Helena, Montana 59635

Dear Mr. Jensen:

Enclosed are the analytical results for the water samples that were collected from your ground water well on October 8, 2007. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The water quality of your well is good with near neutral pH and low levels of total dissolved solids and metals. The tested water quality parameters of the well for the constituents samples are better than the Montana Human Health Standards and Federal Maximum Concentration Limits (MCL)/Action Levels. These recent water quality results are consistent with previous monitoring data from your site and do not indicate significant changes from historical baseline data.

If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

Jon Nickel

Jon Nickel

Enclosure

Cc: Tom Aldrich
Bob Miller

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring October 2007
Lab ID: H07100105-001
Client Sample ID: EHR-1007-300

Jensen Residence
401 Gail Street

Report Date: 10/30/07
Collection Date: 10/08/07 12:00
DateReceived: 10/08/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	10/10/07 09:08 / sld
Conductivity	716	umhos/cm		1		A2510 B	10/14/07 12:46 / sld
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/14/07 21:08 / sld
Solids, Total Dissolved TDS @ 180 C	547	mg/L		10		A2540 C	10/14/07 20:57 / sld
INORGANICS							
Sulfate	225	mg/L	D	3		A4500-SO4 E	10/11/07 15:11 / abb
Alkalinity, Total as CaCO3	130	mg/L		1		A2320 B	10/15/07 13:14 / abb
Bicarbonate as HCO3	160	mg/L		1		A2320 B	10/15/07 13:14 / abb
Chloride	31	mg/L		1		A4500-Cl C	10/15/07 10:49 / sld
METALS, DISSOLVED							
Arsenic	0.003	mg/L		0.002		E200.8	10/16/07 04:03 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/16/07 04:03 / eli-b
Calcium	83	mg/L		1		E200.7	10/11/07 14:32 / eli-b
Copper	ND	mg/L		0.004		E200.8	10/16/07 04:03 / eli-b
Iron	0.04	mg/L		0.02		E200.7	10/11/07 14:32 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/16/07 04:03 / eli-b
Magnesium	17	mg/L		1		E200.7	10/11/07 14:32 / eli-b
Manganese	ND	mg/L		0.01		E200.7	10/11/07 14:32 / eli-b
Potassium	4	mg/L		1		E200.7	10/11/07 14:32 / eli-b
Selenium	0.019	mg/L		0.005		E200.8	10/17/07 03:47 / eli-b
Sodium	20	mg/L		1		E200.7	10/11/07 14:32 / eli-b
Zinc	0.03	mg/L		0.01		E200.8	10/16/07 04:03 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

ASARCO

November 2, 2007

Mrs. Louise Nordstrom
P. O. Box 601
109 Gail Street
East Helena, Montana 59635

Dear Mrs. Nordstrom:

Enclosed are the analytical results for the irrigation water samples that were collected from your groundwater well on October 8, 2007. All the results are reported in milligrams per liter, unless otherwise noted. The physical parameters are reported in the units noted on the attached laboratory analytical report. "ND" indicates that the parameter was not detected at the reporting limit.

The water quality of your well is good with near neutral pH and low levels of total dissolved solids and metals. The tested water quality parameters of the well for the constituents sampled are better than all Montana Human Health Standards. These recent water quality results are consistent with previous monitoring data from your site and do not indicate significant changes from historical baseline data.

If you have any questions about the enclosed water quality results, please feel free to contact me at 227-4529.

Sincerely,

Jon Nickel

Jon Nickel

Enclosure
Cc: Bob Miller
Tom Aldrich

ENERGY LABORATORIES
877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@onergylab.com

LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring October 2007
Lab ID: H07100105-004
Client Sample ID: EHR-1007-303 Nordstrom Residence 109 Gail Street

Report Date: 10/30/07
Collection Date: 10/08/07 12:45
DateReceived: 10/08/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	10/10/07 09:16 / sld
Conductivity	*287*	*umhos/cm*		*1*		*A2510 B*	*10/14/07 12:49 / sld*
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/14/07 21:09 / sld
Solids, Total Dissolved TDS @ 180 C	192	mg/L		10		A2540 C	10/14/07 20:58 / sld
INORGANICS							
Sulfate	49	mg/L		1		A4500-SO4 E	10/11/07 15:13 / abb
Alkalinity, Total as CaCO3	79	mg/L		1		A2320 B	10/15/07 13:47 / abb
Bicarbonate as HCO3	96	mg/L		1		A2320 B	10/15/07 13:47 / abb
Chloride	5	mg/L		1		A4500-Cl C	10/15/07 10:59 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	10/16/07 04:26 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/16/07 04:26 / eli-b
Calcium	31	mg/L		1		E200.7	10/11/07 15:02 / eli-b
Copper	ND	mg/L		0.004		E200.8	10/16/07 04:26 / eli-b
Iron	0.04	mg/L		0.02		E200.7	10/11/07 15:02 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/16/07 04:26 / eli-b
Magnesium	6	mg/L		1		E200.7	10/11/07 15:02 / eli-b
Manganese	ND	mg/L		0.01		E200.7	10/11/07 15:02 / eli-b
Potassium	2	mg/L		1		E200.7	10/11/07 15:02 / eli-b
Selenium	ND	mg/L		0.005		E200.8	10/17/07 04:10 / eli-b
Sodium	13	mg/L		1		E200.7	10/11/07 15:02 / eli-b
Zinc	0.01	mg/L		0.01		E200.8	10/16/07 04:26 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

VALIDATION SUMMARY

ASARCO EAST HELENA POST RI/FS LONG-TERM MONITORING PROGRAM

EAST HELENA RESIDENTIAL GROUNDWATER INORGANIC ANALYSES

SEPTEMBER 2007

(ENERGY LABORATORY WORK ORDER NO. H07090318)

Prepared for:
Mr. Jon Nickel
ASARCO Incorporated
PO Box 1230
East Helena, MT 59635

Prepared by:
Linda L. Tangen
6900 Cherry Blossom Lane
Albuquerque, NM 87111

October 2007

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GLOSSARY OF TERMS

CLP..... Contract Laboratory Program

COC..... Chain of Custody

CRDL..... Contract Required Detection Limit

DI..... Deionized Water

DIS..... Dissolved

DQO..... Data Quality Objective

ELI-Hel ..... Energy Laboratories, Inc., Helena, Montana

EPA..... U.S. Environmental Protection Agency

ICV ..... Initial Calibration Verification

IDL ..... Instrument Detection Limit

LCS..... Laboratory Control Sample

LFB..... Laboratory Fortified Blank

MS ..... Matrix Spike

NA ..... Not Applicable

PDLG..... Project Detection Limit Goal

QC ..... Quality Control

RI/FS..... Remedial Investigation/Feasibility Study

RPD ..... Relative Percent Difference

SC ..... Specific Conductivity

TDS ..... Total Dissolved Solids

SUMMARY

East Helena private well water (groundwater) samples were collected September 27, 2007 for the ASARCO East Helena Facility Post RI/FS Long-Term Monitoring sample event. Inorganic constituents for these samples were validated using U.S. Environmental Protection Agency (EPA) guidelines for data validation (EPA 2002) and the project work plan (ASARCO 2002 and 2007). Samples were analyzed by Energy Laboratories, Inc. (ELI-Hel) in Helena, Montana, under work order H07090318.

Tables containing Validation Code Definitions (Table 1) and the Summary of Qualified Data (Table 2) are located in Appendix 1. The validated database is located in Appendix 2. Field notes, chain of custodies, and laboratory reports are located in Appendices 4, 5, and 6, respectively.

Data quality objectives for this project are as follows:

- **Precision** is determined by field and laboratory duplicate sample results that are within control limits. The completeness objective for precision is 90% of the duplicate sample results within control limits. **This objective was met as 100% of the field and laboratory duplicate results were within control limits.**

- **Accuracy** is determined by laboratory control sample (LCS) and matrix spike (MS) sample results that are within control limits. The completeness objective for accuracy is 90% of the LCS and MS sample results within control limits. **This objective was met as 100% of the LCS results and 100% of the MS results were within control limits (see the following note).**

  ***Note:** Due to the lack of LCSs for dissolved metals, fortified laboratory blanks were used to assess the accuracy for these analytes. In several cases, samples used for matrix spikes for were from unknown sources and therefore, could not be used to evaluate the accuracy of this sampling event's data. This is explained further in the following report.

- **Completeness** is calculated by the number of valid (not rejected) data per number of planned data, expressed as a percentage. The completeness goal for this project was 90%. **This goal was met as 100% of the planned data were analyzed and deemed valid.**

Following is a summary of the qualified (flagged) data for this sampling event.

Qualified Data Due to Field QC Exceedances:

- Dissolved iron was detected in the field blank, which resulted in five data qualified "UJ" to indicate a possible positive bias.

Qualified Data Due to Laboratory QC Exceedances:

- All laboratory QC samples were within control limits.

Conclusion

The data collected in September 2007 for the ASARCO East Helena Post RI/FS Long Term Monitoring Program are deemed acceptable and can be used for the purposes they were intended, providing qualified data are used with caution. Of the measured results, **96.3 (131 out of 136 results) can be used without qualification.**

Data Validation Report by: Linda L. Tangen

Client Review: Jon Nickel

DATA VALIDATION REPORT

1. INTRODUCTION

- This validation applies to analyses for six groundwater and quality control samples collected on September 27, 2007 for the ASARCO East Helena Post RI/FS Long-Term Monitoring Program (ASARCO 2002 and 2007). Samples were analyzed by Energy Laboratories in Helena, Montana (ELI-Hel) under work order H07090318. One field blank and one field duplicate sample were included with these samples.

- Validation procedures used are generally consistent with:
  - _X_ EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganics Data Review (EPA 2002)
  - _X_ Work Plan – Interim Measures Work Plan Addendum (ASARCO 2002)
  - _X_ Post RI/FS Long-Term Monitoring Program (ASARCO 2007)
  - ____ Other

- Overall level of validation:
  - ____ CLP
  - _X_ Standard – Field and laboratory quality control (QC) samples are reviewed; and samples associated with QC violations are flagged.
  - ____ Visual

2. DELIVERABLES

- All laboratory document deliverables were present as specified in the CLP-Statement of Work (EPA 2001), and/or the project contract.
  - _X_ Yes
  - ____ No

- All documentation of field procedures was provided as required.
  - _X_ Yes
  - ____ No

3. FIELD PROCEDURES

- Samples were collected from all project-required sites.
  - _X_ Yes
  - ____ No

- Field parameters were measured in accordance with the project work plan.
  _X_ Yes
  ___ No

- Field instruments were calibrated daily and before measurements were collected.
  _X_ Yes
  ___ No

- Chains of Custodies (COCs) were properly filled out and signed by the field personnel.
  _X_ Yes
  ___ No

- Data entry into field books, on COCs, and on sample labels were accurate and complete.
  _X_ Yes
  ___ No

4. FIELD BLANKS

Blanks: Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

Deionized water (DI), trip, rinsate, or any other field blanks have been carried out at the proper frequency (one rinsate blank and one DI blank per event).
_X_ Yes
___ No

Reported results on the field blanks were less than the Project Detection Limit Goals (PDLGs) or reporting limit.
___ Yes
_X_ No - see notes
Notes: Samples associated with blank detections, and with detected results less than five times the blank value were flagged **"UJ"** to indicate a possible positive bias. Following is a summary of the field blank detections.

Blank Type	Sample Code	Sample Date	Parameter	PDLG (mg/L)	Result (mg/L)	5 X Result (mg/L)	Flags
Field Blank	EHR-0907-305	9/27/07	Bicarbonate	1	4	20	0*
			Iron (Fe) Dis	0.02	0.08	0.40	5
			Specific Conductivity (SC)	5	11	55	0*
			Total Alk	1	3	15	0*

*Note: Associated results were greater than five times the blank value.

5. FIELD DUPLICATES

Field duplicates have been collected at the proper frequency (one field duplicate per event).

_X_ Yes
____ No

Field duplicate relative percent differences (RPDs) were within the required control limits (RPD of 20% or less). If the sample or duplicate result is less or equal to five times the PDLG, the RPD criteria are not used. In these cases, the difference between the sample and the duplicate results must be within ± the PDLG.

_X_ Yes
____ No

6. LABORATORY PROCEDURES

- **Laboratory procedures followed**

  _X_ CLP-Statement of Work (EPA 2001)
  ____ SW-846 (EPA 1986)
  _X_ Methods for Chemical Analysis of Water and Wastes (EPA 1983)
  ____ Other

- **Holding times met**

  _X_ Yes
  ____ No

- **Consistency with project requirements**

  Analyses were carried out as required by the project work plan (ASARCO 2002 and 2007).

  _X_ Yes
  ____ No

  Project specified methods were used.

  _X_ Yes
  ____ No

7. DETECTION LIMITS

- Reporting detection limits met PDLGs.

  _X_ Yes
  ____ No

8. LABORATORY BLANKS

Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

- Method blanks were prepared and analyzed at the required frequency (one per batch or one per 20 samples, whichever is greater.

  _X_ Yes
  ___ No

- All the analytes in the blank were less than the PDLG.

  _X_ Yes
  ___ No

9. LABORATORY MATRIX SPIKES

- A Matrix Spike (MS) sample (pre-digestion) was analyzed at the proper frequency (one per batch and/or matrix).

  ___ Yes
  _X_ No – see notes

  Notes: A sample from an unknown source was used as the matrix spike for total dissolved solids analyses (TDS). Results from the laboratory control standard were used to evaluate the accuracy for TDS. Samples are not qualified for this omission.

- MS recoveries were within the required control limits (75-125%).

  _X_ Yes
  ___ No

10. LABORATORY DUPLICATES

- Laboratory duplicate samples were analyzed at the proper frequency (one per batch or one per 20 samples, whichever is greater).

  _X_ Yes
  ___ No

- RPDs were within the required control limits (RPD of 20% or less). If the sample or duplicate result is less or equal to five times the PDLG, the RPD criteria are not used. In these cases, the difference between the sample and the duplicate results must be within ± the PDLG.

  _X_ Yes
  ___ No

11. LABORATORY CONTROL STANDARDS (LCS)

Laboratory Fortified Blanks (LFBs) were used in lieu of LCS' for metal analyses. This is acceptable for the purpose of the project.

- The reference material used for the LCS or LFB was of the correct matrix.
  _X_ Yes
  ___ No

- LCS' or LFBs were prepared and analyzed at the proper frequency (one per batch or one per 20 samples, whichever is greater).
  _X_ Yes
  ___ No

- LCS recoveries were within the required control limits (80-120% or certified range).
  _X_ Yes
  ___ No

12. INTERPARAMETER COMPARISON

_X_ Lab pH vs. Field pH
_X_ Lab Specific Conductivity (SC) vs. Field SC
_X_ Total Dissolved Solids (TDS) vs. Field SC

Lab pH vs. Field pH: Field and lab pH pairs were compared using laboratory duplicate criteria (refer to section 10). These comparisons were less than or equal to 3.4 RPD and therefore acceptable for the purposes of the project.

Lab SC vs. Field SC: Field and lab SC pairs were compared using laboratory duplicate criteria (refer to section 10). All pairs were less than 20 RPD except one. However, both SC results were in line with historical data for the site and no action was taken. Following is a summary of the pair that exceeded 20 RPD.

Site	Sample Code	Sample Date	Field SC (umohs/cm)	Lab SC (umohs/cm)	RPD	Action
Gail, 401	EHR-0907-303	9/27/07	218	277	23.80%	No Action - In line with historical data.

TDS vs. Field SC: The ratio of TDS to field SC results should lie between 0.55 and 0.75. This ratio is intended to be a check on the accuracy of the TDS and lab SC measurements. In natural waters with high sulfate, the ratio may be much higher and the ratio is less accurate in dilute waters. TDS/SC ratios for this sampling event were 0.64 and 0.82, which were in line with historical data.

13. HISTORICAL COMPARISON SUMMARY

Data for this sampling event were compared with previous sampling events. None of the sites had analyte concentrations greater than three times the standard deviation from the historical mean.

14. DATA QUALITY OBJECTIVES (DQOS)

- The data quality goal was met for precision (90% of the field and laboratory duplicates were within control limits).

  _X_ Yes –see the table on the following page

  ____ No

Precision Objectives

QC Type	Total Results	# of Results Out of Control Limits	# of Results Within Control Limits	% Within Control Limits
Field Duplicates	20	0	20	100%
Lab Duplicates	27	0	27	100%
Overall	**47**	**0**	**47**	**100%**

- The data quality goal was met for accuracy (90% of the LCS and matrix spike results were within control limits).

  _X_ Yes – see the following table

  ____ No

Accuracy Objectives

QC Type	Total Results	# of Results Out of Control Limits	# of Results Within Control Limits	% Within Control Limits
Matrix Spikes	30	0	30	100%
LCS' and LFBs	19	0	19	100%
Overall	**49**	**0**	**49**	**100%**

- DQO target for completeness was met (the number of valid results divided by the number of possible results is 90% or above).

  ____ Yes

  _X_ No – see the following table

Completeness

# of Planned Measurements	Actual # of Measurements	# of Rejected Measurements	# of Valid Measurements	Completeness
136	**136**	**0**	**136**	**100%**

- Samples were qualified for QC exceedances and deficiencies.
  _X_ Yes – see the following table
  ____ No

Qualification of Samples

# of Measurements	# of Qualified Measurements	# Not Qualified	% Not Qualified
136	5	131	96.3%

15. CONCLUSION

The data collected in September 2007 for the ASARCO East Helena Interim Measures semi-annual sample event are deemed acceptable and can be used for the purposes they were intended, providing qualified data are used with caution.

Data Validation Report by: Linda L. Tangen

Client Review by: Jon Nickel

REFERENCES

ASARCO 2002. *Interim Measures Work Plan Addendum, East Helena Facility.* ASARCO Consulting Inc. Revised May.

ASARCO 2007. *Post RI/FS Long-Term Monitoring Program.* ASARCO LLC. April.

EPA 1983. *Methods for Chemical Analysis of Water and Wastes.* United States Environmental Protection Agency. March.

EPA 1986. *Test Method for Evaluating Solid Waste: Physical/Chemical Methods 3rd Ed. 4 Vols.* United States Environmental Protection Agency. November.

EPA 2001. *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis.* United States Environmental Protection Agency. Document Number ILM05.2. December.

EPA 2002. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* United States Environmental Protection Agency. July.

APPENDIX 1

TABLES

TABLE 1.

DATA VALIDATION CODES AND DEFINITIONS

CODE	DEFINITION
J	The associated numerical value is an estimated quantity because quality control criteria were not met. A bias was not determined.
J-	The associated numerical value is estimated with a low bias because quality control criteria were not met.
J+	The estimated numerical value is estimated with a high bias because quality control criteria were not met.
UJ	Blank contamination. Indicates a possible high bias and/or false positive. The associated value is an estimate.
R	Quality control indicates that the data are unusable (compound may or may not be present).
E	Estimated. (Not an EPA code.)

APPENDIX 2

DATABASE

ANALYSES SUMMARY REPORT

Asarco EH Private Well Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Table of Contents by Station Type

Page	Station Type	Station Name
1	Domestic Wells	Gail109
1	Domestic Wells	Gail203
1	Domestic Wells	Gail301
2	Domestic Wells	Gail401
2	Field Quality Control	FieldBlank

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 10/18/2007 9:54:41 AM

C:\EnviroDataDB\Databases\V5_B_DB\EastHelena.mdb

ANALYSES SUMMARY REPORT

Asarco EH Private Well Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Table of Contents By Lab Sample ID

Page	Lab Sample ID	Sample ID	Sample Date	Station Name
2	H07090318-001	EHR-0907-300	9/27/2007	Gail401
2	H07090318-002	EHR-0907-301	9/27/2007	Gail401
1	H07090318-003	EHR-0907-302	9/27/2007	Gail301
1	H07090318-004	EHR-0907-303	9/27/2007	Gail203
1	H07090318-005	EHR-0907-304	9/27/2007	Gail109
2	H07090318-006	EHR-0907-305	9/27/2007	FieldBlank

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 10/18/2007 9:54:41 AM

C:\EnviroDataDB\Databases\V5_B_DB\EastHelena.mdb

ANALYSES SUMMARY REPORT

Asarco EH Private Well Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Table of Contents by Sample ID

Page	Sample ID	Lab Sample ID	Sample Date	Station Name
2	EHR-0907-300	H07090318-001	9/27/2007	Gail401
2	EHR-0907-301	H07090318-002	9/27/2007	Gail401
1	EHR-0907-302	H07090318-003	9/27/2007	Gail301
1	EHR-0907-303	H07090318-004	9/27/2007	Gail203
1	EHR-0907-304	H07090318-005	9/27/2007	Gail109
2	EHR-0907-305	H07090318-006	9/27/2007	FieldBlank

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 10/18/2007 9:54:41 AM

C:\EnviroDataDB\Databases\V5_B_DB\EastHelena.mdb

ANALYSES SUMMARY REPORT

Asarco EH Private Well Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	Gail109	Gail203	Gail301
Water	SAMPLE DATE	9/27/2007	9/27/2007	9/27/2007
	SAMPLE TIME	09:30	09:05	08:45
	LAB	ELI	ELI	ELI
	LAB NUMBER	H07090318-005	H07090318-004	H07090318-003
	SAMPLE NUMBER	EHR-0907-304	EHR-0907-303	EHR-0907-302
	TYPE	Domestic Wells	Domestic Wells	Domestic Wells
	GROUP	Private Wells	Private Wells	Private Wells
	DESCRIPTION			
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	100	93	170
	Calcium (Ca) (DIS)	31	29	160
	Chloride (Cl)	6	5	52
	Magnesium (Mg) (DIS)	6	6	33
	Potassium (K) (DIS)	3	2	8
	Sodium (Na) (DIS)	12	12	129
	Sulfate (SO4)	53	53	657
	Total Alkalinity As CACO3	82	76	140
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	<0.002	<0.002	0.006
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	0.01	0.006
	Iron (Fe) (DIS)	0.03 UJ	0.03 UJ	0.09 UJ
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01	<0.01
	Selenium (Se) (DIS)	<0.005	<0.005	0.318
	Zinc (Zn) (DIS)	<0.01	<0.01	<0.01
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	5.9	6.01	7.36
	pH	7.2	7.1	7.2
	pH (Fld)	7.45	7.28	7.35
	SC (umhos/cm at 25 C) (Fld)	236	218	1450
	SC (umhos/cm at 25 C)	294	277	1470
	Total Suspended Solids	<10	<10	<10
	TDS (Measured at 180 C)	187	177	1200
	Water Temperature (C) (Fld)	9.6	10.5	11.1

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

Run Time: 10/18/2007 9:54:41 AM

C:\EnviroDataDB\Databases\V5_B_DB\EastHelena.mdb

ANALYSES SUMMARY REPORT

Asarco EH Private Well Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	Gail401	Gail401	FieldBlank
Water	SAMPLE DATE	9/27/2007	9/27/2007	9/27/2007
	SAMPLE TIME	08:20	08:30	09:50
	LAB	ELI	ELI	ELI
	LAB NUMBER	H07090318-001	H07090318-002	H07090318-006
	SAMPLE NUMBER	EHR-0907-300	EHR-0907-301	EHR-0907-305
	TYPE	Domestic Wells	Domestic Wells	Field QC
	GROUP	Private Wells	Private Wells	Private Wells
	DESCRIPTION			
	REMARKS		Field Duplicate	Blank
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	160	160	4
	Calcium (Ca) (DIS)	96	97	<1
	Chloride (Cl)	33	33	<1
	Magnesium (Mg) (DIS)	21	21	<1
	Potassium (K) (DIS)	6	6	<1
	Sodium (Na) (DIS)	23	23	2
	Sulfate (SO4)	285	276	<1
	Total Alkalinity As CACO3	130	130	3
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	0.003	0.003	<0.002
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	0.09 UJ	0.09 UJ	0.08
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	0.02	0.02	<0.01
	Selenium (Se) (DIS)	0.02	0.022	<0.005
	Zinc (Zn) (DIS)	0.03	0.03	<0.01
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	5.24		
	pH	7.1	7.2	6.5
	pH (Fld)	6.94		
	SC (umhos/cm at 25 C) (Fld)	625		
	SC (umhos/cm at 25 C)	761	756	11
	Total Suspended Solids	<10	<10	<10
	TDS (Measured at 180 C)	569	573	<10
	Water Temperature (C) (Fld)	11.7		

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

Run Time: 10/18/2007 9:54:41 AM

C:\EnviroDataDB\Databases\V5_B_DB\EastHelena.mdb

APPENDIX 3

FIELD NOTES

SEPTEMBER 27, 2007
MONTHLY SAMPLING OF RESIDENTIAL WELLS
LONG-TERM RI/FS MONITORING

FIELD STANDARDIZATION OF HORIBA

	STANDARD VALUE	METER READING
pH	7.00 SU	4.00 SU
CONDUCTIVITY	4480 umhos/cm	4480 umhos/cm
SALINITY	0.23%	0.23%

JENSEN
401 GAIL STREET
DAVE AND PAUL JENSEN PRESENT DURING SAMPLE COLLECTION. IRRIGATION SYSTEM PURGED FOR 10 MINUTES (8:00-8:10) SAMPLE COLLECTED FROM OUTSIDE GARDEN SPIGOT. SLIGHT TURBIDITY NOTICED IN RAW SAMPLE. DAVE JENSEN REPORTED NO TURBIDITY INSIDE HOME WATER.

pH	6.94 SU
CONDUCTIVITY	625 umhos/cm
D.O	5.24 mg/L
TEMP	11.7°C

EHR-0907-300 ORIGINAL
EHR-0907-301 DUPLICATE

JONES
301 GAIL STREET
EHR-0907-302
IRRIGATION SYSTEM PURGED FOR 10 MINUTES. SAMPLE COLLECTED FROM WELL HEAD SPIGOT.

pH	7.35 SU
CONDUCTIVITY	1450 umhos/cm
D.O	7.36 mg/L
TEMP	11.1°C

FOLEY
203 GAIL STREET
EHR-0907-303
WATER SYSTEM PURGED THROUGH NORTH GARDEN SPIGOT FOR 10 MINUTES

pH	7.28 SU
CONDUCTIVITY	218 umhos/cm
DO	6.01 mg/L
TEMP.	10.5°C

NORDSTROM
109 GAIL STREET
IRRIGATION SYSTEM PURGED THROUGH OUTSIDE LAWN SPIGOT FOR 10 MINUTES

pH	7.45 SU
CONDUCTIVITY	236 umhos/cm
D.O.	5.90 mg/L
TEMP	9.6 °C

EHR-0907-305 FIELD BLANK, ALBERTSON'S DISTILLED WATER

APPENDIX 4

CHAIN OF CUSTODIES

Chain of Custody and Analytical Request Record

PLEASE PRINT, provide as much information as possible. Refer to corresponding notes on reverse side.

Company Name: ASARCO

Project Name, PWS #, Permit #, Etc.: MONTHLY RI/FS LONG-TERM MONITORING - SEPTEMBER 2007

Report Mail Address: P.O. BOX 1230, EAST HELENA, MT 59635

Contact Name, Phone, Fax, Email: JON NICKEL (406) 227-4529

Sampler Name if other than Contact:

Invoice Address:

Invoice Contact & Phone #: JON NICKEL

Purchase Order #:

ELI Quote #:

Report Required For: POTW/WWTP ☐ DW ☐ Other _____

Special Report Formats - ELI must be notified prior to sample submittal for the following:
NELAC ☐ A2LA ☐ Level IV ☐
Other _____
EDD/EDT ☐ Format _____

Notify ELI prior to RUSH sample submittal for additional charges and scheduling

Comments:

Receipt Temp 20 °C
Cooler ID(s)
Custody Seal Y N
Intact Y N
Signature Match Y N

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX (Number of Containers; Sample Type: A W S V B O; Air Water Soils/Solids Vegetation Bioassay Other)	PHYSICAL PARAMETERS	COMMON IONS	METALS							SEE ATTACHED	Normal Turnaround (TAT)	RUSH Turnaround (TAT)	Lab ID
1 EHR-0907-300 RAW	9/27/07	8:20	GW	X	X								X	X		0709318-001
2 EHR-0907-300 METALS		8:20				X										
3 EHR-0907-301 RAW		8:30		X	X											002
4 EHR-0907-301 METALS		8:30				X										
5 EHR-0907-302 RAW		8:45		X	X											003
6 EHR-0907-302 METALS		8:45				X										
7 EHR-0907-303 RAW		9:05		X	X											004
8 EHR-0907-303 METALS		9:05				X										
9 EHR-0907-304 RAW		9:30		X	X											005
10 EHR-0907-304 METALS		9:30				X										

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by:	Date/Time:	Shipped by:	Received by:	Date/Time:
[signature]	9/27/07 8:45		[signature]	9.27.07 10:45
Relinquished by:	Date/Time:	Shipped by:	Received by:	Date/Time:

Sample Disposal: Return to client: _____ Lab Disposal: _____

LABORATORY USE ONLY
Sample Type: _____ # of fractions _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Chain of Custody and Analytical Request Record

Page 2 of 2

PLEASE PRINT, provide as much information as possible. Refer to corresponding notes on reverse side.

Company Name: ASARCO	Project Name, PWS #, Permit #, Etc.: MONTHLY RI/FS LONG-TERM MONITORING - SEPTEMBER 2007
Report Mail Address: P.O. BOX 1230 EAST HELENA, MT 59635	Contact Name, Phone, Fax, E-mail: JON NICKEL (406) 227-4529 — Sampler Name if other than Contact:
Invoice Address:	Invoice Contact & Phone #: JON NICKEL — Purchase Order #: — ELI Quote #:

Report Required For: POTW/WWTP ☐ DW ☐ Other _____

Special Report Formats - ELI must be notified prior to sample submittal for the following:
NELAC ☐ A2LA ☐ Level IV ☐
Other _____
EDD/EDT ☐ Format _____

Notify ELI prior to RUSH sample submittal for additional charges and scheduling

Receipt Temp 7.0 °C
Cooler ID(s) [illegible]
Custody Seal Y N
Intact Y N
Signature Match Y N

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX (Number of Containers; Sample Type: A W S V B O; Air Water Soils/Solids Vegetation Bioassay Other)	PHYSICAL PARAMETERS	COMMON IONS	METALS							SEE ATTACHED	Normal Turnaround (TAT)	RUSH Turnaround (TAT)	Comments:	Lab ID
1 EHR-0907-305 RAW	9/27/07	9:50	GW	X	X								X	X			0709 0318
2 EHR-0907-305 METALS	|	9:50	|			X							X	X			006
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by: [signature]	Date/Time: 9/27/07 / 10:45	Shipped by:	Received by: [signature] 9/27/07 Date/Time: 10:45
Relinquished by:	Date/Time:	Shipped by:	Received by: Date/Time:

Sample Disposal: Return to client: _____ Lab Disposal: _____

LABORATORY USE ONLY
Sample Type: _____ # of fractions _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

[illegible] www.energylab.com for additional information, downloadable fee schedule, forms, & links.

APPENDIX 5

LABORATORY REPORT

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 3161 East Lyndale Ave. • Helena, MT 59604
877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

ANALYTICAL SUMMARY REPORT

October 15, 2007

Asarco LLC
PO Box 1230
East Helena, MT 59635

Workorder No.: H07090318

Project Name: Monthly RI/FS Long Term Monitoring September 2007

Energy Laboratories Inc received the following 6 samples from Asarco LLC on 9/27/2007 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H07090318-001	EHR-0907-300	09/27/07 8:20	09/27/07	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity pH Solids, Total Dissolved Solids, Total Suspended Sulfate
H07090318-002	EHR-301	09/27/07 8:30	09/27/07	Groundwater	Same As Above
H07090318-003	EHR-302	09/27/07 8:45	09/27/07	Groundwater	Same As Above
H07090318-004	EHR-303	09/27/07 9:05	09/27/07	Groundwater	Same As Above
H07090318-005	EHR-304	09/27/07 9:30	09/27/07	Groundwater	Same As Above
H07090318-006	EHR-305	09/27/07 9:50	09/27/07	Groundwater	Same As Above

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT, EPA # MT00005
eli-c - Energy Laboratories, Inc. - Casper, WY, EPA# WY00002
eli-f - Energy Laboratories, Inc. - Idaho Falls, ID, EPA # ID00942
eli-g - Energy Laboratories, Inc. - Gillette, WY, EPA# WY00006
eli-h - Energy Laboratories, Inc - Helena, MT, EPA# MT00945
eli-r - Energy Laboratories, Inc. - Rapid City, SD, EPA# SD00012
eli-t - Energy Laboratories, Inc. - College Station, TX, EPA# TX01520

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES, INC. will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories are indicated within the Laboratory Analytical Report.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

ELI appreciates the opportunity to provide you with this analytical service. For additional information, including certifications, and analytical services visit our web page www.energylab.com.

Report Approved By: Jonathan Hager

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Assistant Lab Manager

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 3161 East Lyndale Ave. • Helena, MT 59604
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CASE NARRATIVE

NONE

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007
Lab ID: H07090318-001
Client Sample ID: EHR-0907-300

Report Date: 10/15/07
Collection Date: 09/27/07 08:20
DateReceived: 09/27/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.1	s.u.		0.1		A4500-H B	10/01/07 12:07 / abb
Conductivity	761	umhos/cm		1		A2510 B	10/03/07 10:15 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/02/07 15:12 / kjw
Solids, Total Dissolved TDS @ 180 C	569	mg/L		10		A2540 C	10/02/07 15:34 / kjw
INORGANICS							
Sulfate	285	mg/L	D	3		A4500-SO4 E	10/09/07 15:55 / abb
Alkalinity, Total as CaCO3	130	mg/L		1		A2320 B	10/01/07 12:11 / abb
Bicarbonate as HCO3	160	mg/L		1		A2320 B	10/01/07 12:11 / abb
Chloride	33	mg/L		1		A4500-Cl C	10/05/07 08:42 / std
METALS, DISSOLVED							
Arsenic	0.003	mg/L		0.002		E200.8	10/10/07 19:19 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/10/07 19:19 / eli-b
Calcium	96	mg/L		1		E200.7	10/01/07 23:10 / eli-b
Copper	ND	mg/L		0.004		E200.8	10/10/07 19:19 / eli-b
Iron	0.09	mg/L		0.02		E200.7	10/01/07 23:10 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/10/07 19:19 / eli-b
Magnesium	21	mg/L		1		E200.7	10/01/07 23:10 / eli-b
Manganese	0.02	mg/L		0.01		E200.7	10/01/07 23:10 / eli-b
Potassium	6	mg/L		1		E200.7	10/01/07 23:10 / eli-b
Selenium	0.020	mg/L		0.005		E200.8	10/10/07 19:19 / eli-b
Sodium	23	mg/L		1		E200.7	10/01/07 23:10 / eli-b
Zinc	0.03	mg/L		0.01		E200.7	10/01/07 23:10 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007
Lab ID: H07090318-002
Client Sample ID: EHR-301

Report Date: 10/15/07
Collection Date: 09/27/07 08:30
DateReceived: 09/27/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	10/01/07 12:14 / abb
Conductivity	756	umhos/cm		1		A2510 B	10/03/07 10:17 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/02/07 15:12 / kjw
Solids, Total Dissolved TDS @ 180 C	573	mg/L		10		A2540 C	10/02/07 15:35 / kjw
INORGANICS							
Sulfate	276	mg/L	D	3		A4500-SO4 E	10/09/07 15:56 / abb
Alkalinity, Total as CaCO3	130	mg/L		1		A2320 B	10/01/07 12:19 / abb
Bicarbonate as HCO3	160	mg/L		1		A2320 B	10/01/07 12:19 / abb
Chloride	33	mg/L		1		A4500-Cl C	10/05/07 08:44 / sld
METALS, DISSOLVED							
Arsenic	0.003	mg/L		0.002		E200.8	10/10/07 19:27 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/10/07 19:27 / eli-b
Calcium	97	mg/L		1		E200.7	10/01/07 23:29 / eli-b
Copper	ND	mg/L		0.004		E200.8	10/10/07 19:27 / eli-b
Iron	0.09	mg/L		0.02		E200.7	10/01/07 23:29 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/10/07 19:27 / eli-b
Magnesium	21	mg/L		1		E200.7	10/01/07 23:29 / eli-b
Manganese	0.02	mg/L		0.01		E200.7	10/01/07 23:29 / eli-b
Potassium	6	mg/L		1		E200.7	10/01/07 23:29 / eli-b
Selenium	0.022	mg/L		0.005		E200.8	10/10/07 19:27 / eli-b
Sodium	23	mg/L		1		E200.7	10/01/07 23:29 / eli-b
Zinc	0.03	mg/L		0.01		E200.7	10/01/07 23:29 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007
Lab ID: H07090318-003
Client Sample ID: EHR-302

Report Date: 10/15/07
Collection Date: 09/27/07 08:45
DateReceived: 09/27/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	10/01/07 12:21 / abb
Conductivity	1470	umhos/cm		1		A2510 B	10/03/07 10:18 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/02/07 15:13 / kjw
Solids, Total Dissolved TDS @ 180 C	1200	mg/L		10		A2540 C	10/02/07 15:35 / kjw
INORGANICS							
Sulfate	657	mg/L	D	6		A4500-SO4 E	10/09/07 15:31 / abb
Alkalinity, Total as CaCO3	140	mg/L		1		A2320 B	10/01/07 12:28 / abb
Bicarbonate as HCO3	170	mg/L		1		A2320 B	10/01/07 12:28 / abb
Chloride	52	mg/L		1		A4500-Cl C	10/05/07 08:47 / sld
METALS, DISSOLVED							
Arsenic	0.006	mg/L		0.002		E200.8	10/10/07 20:05 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/10/07 20:05 / eli-b
Calcium	160	mg/L		1		E200.7	10/01/07 23:37 / eli-b
Copper	0.006	mg/L		0.004		E200.8	10/10/07 20:05 / eli-b
Iron	0.09	mg/L		0.02		E200.7	10/01/07 23:37 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/10/07 20:05 / eli-b
Magnesium	33	mg/L		1		E200.7	10/01/07 23:37 / eli-b
Manganese	ND	mg/L		0.01		E200.7	10/01/07 23:37 / eli-b
Potassium	8	mg/L		1		E200.7	10/01/07 23:37 / eli-b
Selenium	0.318	mg/L		0.005		E200.8	10/10/07 20:05 / eli-b
Sodium	129	mg/L		1		E200.7	10/01/07 23:37 / eli-b
Zinc	ND	mg/L		0.01		E200.7	10/01/07 23:37 / eli-b

Report Definitions:
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QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007
Lab ID: H07090318-004
Client Sample ID: EHR-303

Report Date: 10/15/07
Collection Date: 09/27/07 09:05
DateReceived: 09/27/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.1	s.u.		0.1		A4500-H B	10/01/07 12:30 / abb
Conductivity	277	umhos/cm		1		A2510 B	10/03/07 10:20 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/02/07 15:14 / kjw
Solids, Total Dissolved TDS @ 180 C	177	mg/L		10		A2540 C	10/02/07 15:36 / kjw
INORGANICS							
Sulfate	53	mg/L		1		A4500-SO4 E	10/09/07 15:31 / abb
Alkalinity, Total as CaCO3	76	mg/L		1		A2320 B	10/01/07 12:32 / abb
Bicarbonate as HCO3	93	mg/L		1		A2320 B	10/01/07 12:32 / abb
Chloride	5	mg/L		1		A4500-Cl C	10/05/07 08:48 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	10/10/07 20:13 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/10/07 20:13 / eli-b
Calcium	29	mg/L		1		E200.7	10/01/07 23:40 / eli-b
Copper	0.010	mg/L		0.004		E200.8	10/10/07 20:13 / eli-b
Iron	0.03	mg/L		0.02		E200.7	10/01/07 23:40 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/10/07 20:13 / eli-b
Magnesium	6	mg/L		1		E200.7	10/01/07 23:40 / eli-b
Manganese	ND	mg/L		0.01		E200.7	10/01/07 23:40 / eli-b
Potassium	2	mg/L		1		E200.7	10/01/07 23:40 / eli-b
Selenium	ND	mg/L		0.005		E200.8	10/10/07 20:13 / eli-b
Sodium	12	mg/L		1		E200.7	10/01/07 23:40 / eli-b
Zinc	ND	mg/L		0.01		E200.7	10/01/07 23:40 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007
Lab ID: H07090318-005
Client Sample ID: EHR-304

Report Date: 10/15/07
Collection Date: 09/27/07 09:30
DateReceived: 09/27/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	10/01/07 12:50 / abb
Conductivity	294	umhos/cm		1		A2510 B	10/03/07 10:21 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/02/07 15:14 / kjw
Solids, Total Dissolved TDS @ 180 C	187	mg/L		10		A2540 C	10/02/07 15:36 / kjw
INORGANICS							
Sulfate	53	mg/L		1		A4500-SO4 E	10/09/07 15:32 / abb
Alkalinity, Total as CaCO3	82	mg/L		1		A2320 B	10/01/07 12:54 / abb
Bicarbonate as HCO3	100	mg/L		1		A2320 B	10/01/07 12:54 / abb
Chloride	6	mg/L		1		A4500-Cl C	10/05/07 08:50 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	10/10/07 20:21 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/10/07 20:21 / eli-b
Calcium	31	mg/L		1		E200.7	10/01/07 23:44 / eli-b
Copper	ND	mg/L		0.004		E200.8	10/10/07 20:21 / eli-b
Iron	0.03	mg/L		0.02		E200.7	10/01/07 23:44 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/10/07 20:21 / eli-b
Magnesium	6	mg/L		1		E200.7	10/01/07 23:44 / eli-b
Manganese	ND	mg/L		0.01		E200.7	10/01/07 23:44 / eli-b
Potassium	3	mg/L		1		E200.7	10/01/07 23:44 / eli-b
Selenium	ND	mg/L		0.005		E200.8	10/10/07 20:21 / eli-b
Sodium	12	mg/L		1		E200.7	10/01/07 23:44 / eli-b
Zinc	ND	mg/L		0.01		E200.7	10/01/07 23:44 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007
Lab ID: H07090318-006
Client Sample ID: EHR-305

Report Date: 10/15/07
Collection Date: 09/27/07 09:50
DateReceived: 09/27/07
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.5	s.u.		0.1		A4500-H B	10/01/07 12:56 / abb
Conductivity	11	umhos/cm		1		A2510 B	10/03/07 10:25 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	10/02/07 15:15 / kjw
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	10/02/07 15:37 / kjw
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	10/09/07 15:32 / abb
Alkalinity, Total as CaCO3	3	mg/L		1		A2320 B	10/01/07 12:57 / abb
Bicarbonate as HCO3	4	mg/L		1		A2320 B	10/01/07 12:57 / abb
Chloride	ND	mg/L		1		A4500-Cl C	10/05/07 08:52 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	10/10/07 22:40 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	10/10/07 22:40 / eli-b
Calcium	ND	mg/L		1		E200.7	10/01/07 23:48 / eli-b
Copper	ND	mg/L		0.004		E200.8	10/10/07 22:40 / eli-b
Iron	0.08	mg/L		0.02		E200.7	10/01/07 23:48 / eli-b
Lead	ND	mg/L		0.005		E200.8	10/10/07 22:40 / eli-b
Magnesium	ND	mg/L		1		E200.7	10/01/07 23:48 / eli-b
Manganese	ND	mg/L		0.01		E200.7	10/01/07 23:48 / eli-b
Potassium	ND	mg/L		1		E200.7	10/01/07 23:48 / eli-b
Selenium	ND	mg/L		0.005		E200.8	10/10/07 22:40 / eli-b
Sodium	2	mg/L		1		E200.7	10/01/07 23:48 / eli-b
Zinc	ND	mg/L		0.01		E200.7	10/01/07 23:48 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007

Report Date: 10/15/07
Work Order: H07090318

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B								Batch: 071001A-ALK-W	
Sample ID: MBLK1_071001A	Method Blank				Run: TITTR_071001A			10/01/07 11:50	
Alkalinity, Total as CaCO3	ND	mg/L	1						
Bicarbonate as HCO3	ND	mg/L	1						
Sample ID: LCS1_071001A	Laboratory Control Sample				Run: TITTR_071001A			10/01/07 11:55	
Alkalinity, Total as CaCO3	590	mg/L	4.0	99	90	110			
Sample ID: H07090318-006AMS	Sample Matrix Spike				Run: TITTR_071001A			10/01/07 13:03	
Alkalinity, Total as CaCO3	590	mg/L	4.0	98	90	110			
Sample ID: H07090318-006AMSD	Sample Matrix Spike Duplicate				Run: TITTR_071001A			10/01/07 13:08	
Alkalinity, Total as CaCO3	590	mg/L	4.0	98	90	110	0.3	20	
Sample ID: H07090348-006ADUP	Sample Duplicate				Run: TITTR_071001A			10/01/07 13:59	
Alkalinity, Total as CaCO3	2.0	mg/L	4.0				0.0	20	
Bicarbonate as HCO3	2.4	mg/L	4.0				0.0	20	
Method: A2510 B								Batch: 071003A-COND-PROBE-W	
Sample ID: LCS1_071003A	Laboratory Control Sample				Run: COND_071003A			10/03/07 10:13	
Conductivity	723	umhos/cm	1.0	101	90	110			
Sample ID: H07090318-005ADUP	Sample Duplicate				Run: COND_071003A			10/03/07 10:23	
Conductivity	294	umhos/cm	1.0				0.2	10	
Method: A2540 C								Batch: 071002A-SLDS-TDS-W	
Sample ID: MBLK1_071002A	Method Blank				Run: SOLIDS_071002B			10/02/07 15:33	
Solids, Total Dissolved TDS @ 180 C	3	mg/L	1.0						
Sample ID: LCS1_071002A	Laboratory Control Sample				Run: SOLIDS_071002B			10/02/07 15:33	
Solids, Total Dissolved TDS @ 180 C	994	mg/L	10	99	90	110			
Sample ID: H07090318-006ADUP	Sample Duplicate				Run: SOLIDS_071002B			10/02/07 15:37	
Solids, Total Dissolved TDS @ 180 C	5.00	mg/L	10				0.0	20	
Sample ID: H07090348-007AMS	Sample Matrix Spike				Run: SOLIDS_071002B			10/02/07 15:43	
Solids, Total Dissolved TDS @ 180 C	2100	mg/L	10	99	80	120			
Sample ID: H07090348-007AMSD	Sample Matrix Spike Duplicate				Run: SOLIDS_071002B			10/02/07 15:44	
Solids, Total Dissolved TDS @ 180 C	2110	mg/L	10	100	80	120	0.6	10	

Qualifiers:

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QA/QC Summary Report

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007

Report Date: 10/15/07
Work Order: H07090318

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 D								Batch: 071002A-SLDS-TSS-W	
Sample ID: LCS1_071002A	Laboratory Control Sample				Run: SOLIDS_071002A			10/02/07 15:11	
Solids, Total Suspended TSS @ 105 C	1840	mg/L	10	92	70	130			
Sample ID: H07090318-006ADUP	Sample Duplicate				Run: SOLIDS_071002A			10/02/07 15:16	
Solids, Total Suspended TSS @ 105 C	ND	mg/L	10				0.0	10	
Method: A4500-Cl C								Batch: 071005A-CL-TTR-W	
Sample ID: MBLK1_071005A	Method Blank				Run: TITTR_071005A			10/05/07 08:37	
Chloride	ND	mg/L	0.7						
Sample ID: LCS1_071005A	Laboratory Control Sample				Run: TITTR_071005A			10/05/07 08:39	
Chloride	105	mg/L	1.0	105	90	110			
Sample ID: H07090318-006AMS	Sample Matrix Spike				Run: TITTR_071005A			10/05/07 09:02	
Chloride	11.0	mg/L	1.0	110	90	110			
Sample ID: H07090318-006AMSD	Sample Matrix Spike Duplicate				Run: TITTR_071005A			10/05/07 09:15	
Chloride	10.5	mg/L	1.0	105	90	110	4.7	20	
Method: A4500-H B								Batch: 071001A-PH-W	
Sample ID: LCS1_071001A	Laboratory Control Sample				Run: PH_071001A			10/01/07 11:38	
pH	7.02	s.u.	0.10	100	98.6	101.4			
Sample ID: H07090318-004ADUP	Sample Duplicate				Run: PH_071001A			10/01/07 12:33	
pH	7.14	s.u.	0.10				0.1	2	
Method: A4500-SO4 E								Batch: 071009A-SO4-TURB-W	
Sample ID: MBLK1_071009A	Method Blank				Run: TURBIDITY_071009A			10/09/07 15:29	
Sulfate	ND	mg/L	0.6						
Sample ID: LCS1_071009A	Laboratory Control Sample				Run: TURBIDITY_071009A			10/09/07 15:29	
Sulfate	107	mg/L	1.1	107	90	110			
Sample ID: H07090318-006AMS	Sample Matrix Spike				Run: TURBIDITY_071009A			10/09/07 15:33	
Sulfate	21.2	mg/L	1.0	106	80	120			
Sample ID: H07090318-006AMSD	Sample Matrix Spike Duplicate				Run: TURBIDITY_071009A			10/09/07 15:33	
Sulfate	21.5	mg/L	1.0	107	80	120	1.4	10	

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QA/QC Summary Report

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007

Report Date: 10/15/07
Work Order: H07090318

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: SUB-B100266	
Sample ID: QCS	Initial Calibration Verification Standard							10/01/07 11:39	
Calcium	48.6	mg/L	1.0	97	90	110			
Iron	4.96	mg/L	0.030	99	90	110			
Magnesium	48.9	mg/L	1.0	98	90	110			
Manganese	4.81	mg/L	0.010	96	90	110			
Potassium	48.7	mg/L	1.0	97	90	110			
Sodium	50.7	mg/L	1.0	101	90	110			
Zinc	0.999	mg/L	0.010	100	90	110			
Method: E200.7								Batch: B_R100266	
Sample ID: MB-TJADIS071001A	Method Blank				Run: SUB-B100266			10/01/07 12:09	
Calcium	ND	mg/L	0.02						
Iron	ND	mg/L	0.005						
Magnesium	ND	mg/L	0.1						
Manganese	ND	mg/L	0.001						
Potassium	ND	mg/L	0.07						
Sodium	ND	mg/L	0.04						
Zinc	ND	mg/L	0.001						
Sample ID: LFB-TJADIS071001A	Laboratory Fortified Blank				Run: SUB-B100266			10/01/07 12:13	
Calcium	49.8	mg/L	1.0	100	85	115			
Iron	4.98	mg/L	0.030	100	85	115			
Magnesium	49.9	mg/L	1.0	100	85	115			
Manganese	4.83	mg/L	0.010	97	85	115			
Potassium	49.3	mg/L	1.0	99	85	115			
Sodium	50.4	mg/L	1.0	101	85	115			
Zinc	1.01	mg/L	0.010	101	85	115			
Sample ID: H07090318-001B	Sample Matrix Spike				Run: SUB-B100266			10/01/07 23:14	
Calcium	191.9	mg/L	1.0	96	70	130			
Iron	9.682	mg/L	0.030	96	70	130			
Magnesium	118.0	mg/L	1.0	97	70	130			
Manganese	9.290	mg/L	0.010	93	70	130			
Potassium	103.3	mg/L	1.0	98	70	130			
Sodium	118.8	mg/L	1.0	95	70	130			
Zinc	1.960	mg/L	0.010	96	70	130			
Sample ID: H07090318-001B	Sample Matrix Spike Duplicate				Run: SUB-B100266			10/01/07 23:25	
Calcium	193.6	mg/L	1.0	98	70	130	0.9	20	
Iron	9.728	mg/L	0.030	96	70	130	0.5	20	
Magnesium	119.7	mg/L	1.0	99	70	130	1.4	20	
Manganese	9.331	mg/L	0.010	93	70	130	0.4	20	

Qualifiers:

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QA/QC Summary Report

Client: Asarco LLC
Project: Monthly RI/FS Long Term Monitoring September 2007

Report Date: 10/15/07
Work Order: H07090318

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: B_R100266
Sample ID: H07090318-001B	Sample Matrix Spike Duplicate				Run. SUB-B100266			10/01/07 23:25	
Potassium	101.6	mg/L	1.0	96	70	130	1.7	20	
Sodium	118.1	mg/L	1.0	95	70	130	0.6	20	
Zinc	1.962	mg/L	0.010	97	70	130	0.1	20	

Qualifiers:
RL - Analyte reporting limit.
ND - Not detected at the reporting limit.

VALIDATION SUMMARY

ASARCO EAST HELENA INTERIM MEASURES

POST RI/FS LONG-TERM MONITORING PROJECT

GROUNDWATER AND CAMU WELLS

BI-MONTHLY SAMPLE EVENT

INORGANIC AND ORGANIC ANALYSES

SEPTEMBER 2007

ENERGY LABORATORY WORK ORDER NOS.
H07090010, H07090032, H07090052, H07090102, H07090115, and H07090135

Prepared for:
Mr. Jon Nickel
ASARCO Incorporated
PO Box 1230
East Helena, MT 59635

Prepared by:
Linda L. Tangen
6900 Cherry Blossom Lane
Albuquerque, NM 87111

October 2007

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GLOSSARY OF TERMS

BFS ..... Blind Field Standard

CAMU ..... Corrective Action Management Unit

CLP ..... Contract Laboratory Program

COC ..... Chain of Custody

CRDL ..... Contract Required Detection Limit

DI ..... Deionized Water

DIS ..... Dissolved

ELI-Hel ..... Energy Laboratories, Inc., Helena, Montana

EPA ..... U.S. Environmental Protection Agency

LCS ..... Laboratory Control Sample

MS ..... Matrix Spike

NA ..... Not Applicable

PDLG ..... Project Detection Limit Goal

RI/FS ..... Remedial Investigation/Feasibility Study

QC ..... Quality Control

RPD ..... Relative Percent Difference

RL ..... Reporting Level

SC ..... Specific Conductivity

SOW ..... Statement of Work

SWL ..... Static Water Level

TDS ..... Total Dissolved Solids

SUMMARY

Groundwater and Corrective Action Management Unit (CAMU) well samples were collected from September 4 through 13, 2007 for the ASARCO East Helena Post Remedial Investigation/Feasibility Study (Post-RI/FS) bi-monthly sample event. Inorganic constituents for these samples were validated using U.S. Environmental Protection Agency (EPA) guidelines for data validation (EPA 2002) and the project work plan (ASARCO 2002 and ASARCO 2007). Samples were analyzed by Energy Laboratories, Inc. (ELI-Hel) in Helena, Montana, under work orders: H07090010, H07090032, H07090052, H07090102, H07090115, and H07090135.

Tables containing Validation Code Definitions (Table 1) and the Summary of Qualified Data (Table 2) are located in Appendix 1. The validated database is located in Appendix 2. Field notes, chain of custodies, and laboratory reports are located in Appendices 4, 5, and 6, respectively.

Data quality objectives for this project are as follows:

- **Precision** is determined by the number of field and laboratory duplicate sample results within quality control (QC) limits. This is quantitatively reported as the number of duplicate results within QC limits per total number of duplicate results, expressed as a percentage.

  For this sampling event, 100% (120 out of 120 results) of the field duplicate and 100% (294 out of 294 results) of the laboratory duplicate results were within control limits. Overall precision was calculated at 100% (414 out of 414 results).

- **Accuracy** is determined by the matrix spike (MS) and laboratory control sample (LCS) results within QC control limits. This is quantitatively reported as the number of MS and LCS results within QC limits per total number of MS and LCS expressed as a percentage.

  For this sampling event, 100% (159 out of 159 results) of the LCS and 100% (201 out of 201 results) of the MS results were within control limits. Overall accuracy was calculated at 100% (360 out of 360 results).

- **Completeness** is determined by the number of valid data per number of planned data. This is quantitatively reported as a percentage. The completeness goal for this project is 90%.

For this sampling event, the completeness goal of 90% was met. The completeness for sample collection and analysis was calculated at 99.9% (1609 valid out of 1610 planned data).

Following is a summary of the qualified (flagged) data for this sampling event.

Qualified Data Due to Field QC Exceedances:

- Dissolved arsenic was qualified to indicate a possible positive bias for 11 samples due to detections in two rinsate blanks.
- Dissolved iron was qualified to indicate a possible positive bias for 14 samples due to detections in two deionized water (DI) blanks.
- Total dissolved solids (TDS) were qualified to indicate a possible positive bias for one sample due to a detection in one DI blank.

Qualified Data Due to Laboratory QC Exceedances:

- No data were qualified for laboratory QC exceedances.

Other Issues:

- The dissolved oxygen reading for DH-21 was rejected due to air in the sample tubing.
- Samples were not collected at sites DH-2 and EH-54 due to dry conditions.

Conclusion

In conclusion, the **data collected in September 2007 for the ASARCO Post-RI/FS bi-monthly sample event are deemed acceptable and can be used for the purposes they were intended,** providing qualified data are used with caution. Qualified data may indicate a bias or lack of precision. Of the measured results, **98.3% (1582 out of 1609 results) can be used without qualification**.

Data Validation Report by: Linda L. Tangen

Client Review: Jon Nickel

DATA VALIDATION REPORT

1. INTRODUCTION

- This validation applies to inorganic analytes from 67 groundwater and CAMU well samples collected for the ASARCO East Helena Post-RI/FS bi-monthly sample event. These samples were collected from September 4 through 13, 2007 and included six field duplicates, 12 field blank samples, and three blind field standards.

- Validation procedures used are generally consistent with:
  - _X_ EPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganics Data Review (EPA 2002)
  - _X_ Work Plan – Interim Measures Work Plan Addendum (ASARCO 2002 and ASARCO 2007)
  - ___ Other

- Overall level of validation:
  - ___ CLP
  - _X_ Standard – Field and laboratory quality control (QC) samples are reviewed; and samples associated with QC violations are flagged.

2. DELIVERABLES

- All laboratory document deliverables were present as specified in the CLP-Statement of Work (SOW) (EPA 2001), and/or the project contract.
  - _X_ Yes
  - ___ No

- All documentation of field procedures was provided as required.
  - _X_ Yes
  - ___ No

- All data entry was consistent, accurate, and complete
  - ___ Yes
  - _X_ No - see notes

  Notes: The following data entry errors were noted. These errors were minor and did not affect the overall quality of the sample data.

  - The static water level (SWL) for site DH-21 (AEH-0709-163) was incorrectly recorded as 29.5 feet in the field book. The correct SWL (24.14 feet) was recorded on the sampling form.
  - The sulfate result for site EH-63 (AEH-0709-111) was incorrectly entered as 2760 mg/L in the original laboratory report. The laboratory took corrective action and revised the report to read 269 mg/L.

3. FIELD PROCEDURES

- All project-required sites were visited.
  _X_ Yes
  ___ No

- All project-required samples were collected.
  ___ Yes
  _X_ No – see notes
  Notes: Samples were not collected at sites DH-2 and EH-54 due to dry conditions.

- Field parameters were measured in accordance with the project work plan.
  ___ Yes
  _X_ No – see notes
  Notes: The dissolved oxygen reading for site DH-21 (AEH-0709-163) was rejected (flagged with "R") due to air in the sample tubing.

- Field instruments were calibrated daily and before measurements were collected.
  _X_ Yes
  ___ No

- Chains of Custodies (COCs) were properly filled out and signed by the field personnel.
  ___ Yes
  _X_ No - see notes
  Notes: Samples AEH-0709-100 through AEH-0709-105 were incorrectly recorded as AEH-0708-100 through AEH-0708-105 on the COC. The laboratory recorded the sample codes correctly in the reports.

- Samples were properly preserved.
  _X_ Yes
  ___ No

4. FIELD BLANKS

Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

- Deionized (DI) and rinsate blanks were carried out at the proper frequency (one rinsate blank and one DI blank per 20 samples).
  _X_ Yes
  ___ No

- Reported results for field blanks were less than the Project Detection Limit Goals (PDLGs).
  ___ Yes
  _X_ No - see notes on the following page

Field Blank Notes: Associated samples (sample collected the same day as the blank) with detected results less than five times the blank value were flagged **"UJ"** to indicate a possible positive bias. Table 3 in Appendix 1 lists the summary of field blank detections.

5. FIELD DUPLICATES

- Field duplicates have been collected at the proper frequency (one field duplicate per 20 samples).
  _X_ Yes
  ___ No

- Field duplicate relative percent differences (RPDs) were within the required control limits (RPD of 20% or less). If the sample or duplicate result is less than or equal to five times the PDLG, the RPD criteria are not used. In these cases, the difference between the sample and the duplicate results must be within ± the PDLG.
  _X_ Yes
  ___ No

6. BLIND FIELD STANDARD (BFS)

- Standards were submitted to the laboratory at the proper frequency (one sampling per event).
  _X_ Yes
  ___ No

- The reference material used was of the correct matrix.
  _X_ Yes – see notes
  ___ No
  Notes: The following standards were used for this sampling event:
  ERA Standard 506 - Nutrients
  ERA Standard 507 – Minerals
  ERA Standard 740 - Metals

- Standard recoveries were within the required control limits (80-120% or certified range).
  _X_ Yes
  ___ No

7. LABORATORY PROCEDURES

- **Laboratory procedures followed**
  _X_ CLP-SOW (EPA 2001)
  ___ SW-846 (EPA 1986)
  _X_ Methods for Chemical Analysis of Water and Wastes (EPA 1983)

- **Holding times met**
  _X_ Yes
  ___ No

- **Consistency with project requirements**
  Analyses were carried out as requested.
  _X_ Yes
  ___ No

  Project specified methods were used.
  _X_ Yes
  ___ No

8. DETECTION LIMITS

- Reporting levels (RLs) were less than or equal to the PDLGs.
  _X_ Yes
  ___ No

9. LABORATORY BLANKS

Please note that the highest blank value associated with any particular analyte is the blank value used for the flagging process.

- **Method blanks**
  Blanks were prepared and analyzed at the required frequency (one per batch or one per 20 samples, whichever is greater).
  ___Yes
  _X_ No – see notes
  Notes: The following sample batches did not meet the frequency criteria for method blanks (MB).

Reason For Not Meeting Required Frequency	Parameter	Analytical Batch	Assoc. Sample Batch (Lab Code Prefix)	Assoc. Samples (Lab Code Suffix)
One MB per 21 Samples	Dis Arsenic, Cadmium, Copper, Lead, and Selenium	B_R99426	H07090102	9
No MB Was Run	TDS	070913A-SLDS-TDS-W	H07090102	1-9
One MB per 33 Samples	Chloride & Sulfate	070918A-TTR-W, 070917A-SO4-Turb-W	H07090115	12
One MB per 33 Samples	Chloride & Sulfate	070918A-TTR-W, 070917A-SO4-Turb-W	H07090135	1-12

All the analytes in the blank were less than the PDLG (and/or reporting limits).
____Yes
_X_ No – see notes

Notes: Associated samples with detected results less than five times the blank value are normally flagged **"UJ"** to indicate a possible positive bias. However, for this sampling event, none of the associated samples had values less than five times the blank value. Following is a summary of the method blank detections.

Blank Sample Code	Sample Batch	Analysis Batch	Analysis Date	Parameter	PDLG (mg/L)	Result (mg/L)	5 X Result (mg/L)	# of Flags
MB-28797	H07090115	B_28797	9/17/2007	Arsenic (Tot)	0.005	0.01	0.05	0
MB-SPDIS070918A	H07090115	B_R99585	9/18/2007	Arsenic (Dis)	0.005	0.02	0.1	0

10. LABORATORY MATRIX SPIKES

- A matrix spike (MS) sample (pre-digestion) was analyzed at the proper frequency (one per batch and/or matrix).

  ____Yes
  _X_ No – see notes

  Notes: The following sample batches did not meet the frequency criteria for MS samples.

Reason For Not Meeting Required Frequency	Parameter	Analytical Batch	Assoc. Sample Batch (Lab Code Prefix)	Assoc. Samples (Lab Code Suffix)
MS from Unknown Source	Sulfate, Calcium, Magnesium, Potassium, and Sodium	070905A-SO4-Turb-W, B_R99016	H07090010	1-7
No MS Was Run	Total Dissolved Solids (TDS)	070905A-SLDS-W	H07090010	1-7
No MS Was Run	TDS	070907A-SLDS-TDS-W	H07090032	1-12
MS from Unknown Source	TDS and Dis Manganese	070910A-S:DS-TDS-W, B_R99223	H07090052	1-13
No MS Was Run	TDS	070913A-SLDS-TDS-W	H07090102	1-9
One MS per 33 Samples	Chloride	070918A-TTR-W	H07090115	12
MS from Unknown Source	Tot Arsenic, Cadmium, Copper, Iron, Manganese, and Zinc	B_28797, B_R99498, B_R99834	H07090115	4-8
MS from Unknown Source	Arsenic^{+3} and Arsenic^{+5}	C_R89790	H07090135	9 & 10
One MS per 33 Samples	Chloride	070918A-TTR-W	H07090135	1-12
No MS Was Run	TDS	070918A-SLDS-TDS-W	H07090135	1-12
MS from Unknown Source	Tot Arsenic, Cadmium, Copper, Iron, Manganese, and Zinc	B_28872, B_R99739	H07090135	9, 10 & 14

- MS recoveries were within the required control limits (75-125%).
  _X_Yes
  ___ No

11. LABORATORY DUPLICATES

- Laboratory duplicate samples were analyzed at the proper frequency (one per batch or one per 20 samples, whichever is greater).
  ___Yes
  _X_ No – see notes

  Notes: The following sample batches did not meet the frequency criteria for laboratory duplicates.

Reason For Not Meeting Required Frequency	Parameter	Analytical Batch	Assoc. Sample Batch (Lab Code Prefix)	Assoc. Samples (Lab Code Suffix)
One Dup per 23 Samples	PH	070914A-pH-W	H07090135	10-11
One Dup per 24 Samples	Total Suspended Solids (TSS)	070918A-SLDS-TSS-W	H07090135	1-12

- The laboratory duplicate RPDs were within the required control limits (RPD of 20 or less). If the sample or duplicate result is less than or equal to five times the PDLG, the RPD criteria are not used. In these cases, the difference between the sample and the duplicate results must be within ± the PDLG.
  _X_Yes
  ___ No

12. LABORATORY CONTROL STANDARDS

- The reference material used for the laboratory control sample (LCS) was of the correct matrix.
  _X_Yes
  ___ No

- LCS' were prepared and analyzed at the proper frequency (one per batch or one per 20 samples, whichever is greater).
  ___Yes
  _X_ No – see notes

  Notes: The sample batches on the following page did not meet the frequency criteria for LCS'.

Summary of LCS Frequency Violations

Reason For Not Meeting Required Frequency	Parameter	Analytical Batch	Assoc. Sample Batch (Lab Code Prefix)	Assoc. Samples (Lab Code Suffix)
One LCS per 21 Samples	Dis Arsenic, Cadmium, Copper, Lead & Selenium	B_R99426	H07090102	9
One LCS per 33 Samples	Chloride & Sulfate	070918A-TTR-W, 070917A-SO4-Turb-W	H07090115	12
No LCS Was Run	TDS	070918A-SLDS-TDS-W	H07090115	1-12
One LCS per 33 Samples	Chloride & Sulfate	070918A-TTR-W, 070917A-SO4-Turb-W	H07090135	1-12
One LCS per 23 Samples	PH	070914A-pH-W	H07090135	10-11
No LCS Was Run	TDS	070918A-SLDS-TDS-W	H07090135	1-12
One LCS per 24 Samples	Total Suspended Solids (TSS)	070918A-SLDS-TSS-W	H07090135	1-12

- LCS recoveries were within the required control limits.
  _X_Yes
  ___ No

13. INTERPARAMETER COMPARISON

_X_Lab pH vs. Field pH.

_X_Lab Specific Conductivity (SC) vs. Field SC

_X_Total Dissolved Solids (TDS) vs. Lab SC

RPDs were used to compare field and laboratory measurements. If the RPD was greater than 20, the measurements were then compared to other analytes and/or historical data to determine if they were valid or anomalies. Following is a summary of these comparisons.

Lab pH vs. Field pH: All field and lab pH comparisons were in order (pairs had RPDs less than 20) for this sampling event.

Lab SC vs. Field SC: Three field and lab SC pairs had RPDs greater than 20 for this sampling event. However, since all values were in line with historical events, no action was taken. Following is a summary of these pairs.

Site	Sample Code	Sample Date	Field SC (umhos/cm)	Lab SC (umhos/cm)	RPD	Action
APSD-2	AEH-0709-162	9/13/07	4547	6450	34.6	None
DH-29	AEH-0709-161	9/13/07	4120	2450	50.8	None
MW-4	AEH-0709-133	9/11/07	264	212	21.8	None

TDS vs. Lab SC: The ratio of TDS to lab SC should lie between 0.55 and 0.75. In natural waters with high sulfate, the ratio may be much higher. This ratio is intended to be a check on the accuracy of the TDS and lab SC measurements. (It should be noted that these measurements are less accurate in dilute waters.) All TDS and lab SC comparisons were in line with historical data with ratios ranging from 0.55 to 0.95.

14. Historical Comparison Summary

- Data for the September 2007 sampling event were compared with previous sampling events. Sampling event results which were more than three standard deviations from the historical mean, are listed in Table 4 of Appendix 1.

15. Data Quality Objectives

Project data quality objectives

Data quality objectives for this project are met when QC sample results are within the required control limits. The evaluation of field and laboratory QC samples gives a quantitative measure of precision and accuracy.

- **Precision** is determined by field and laboratory duplicate sample results that are within control limits. Following is a summary of the precision for this sampling event.

QC Type	Total Results	# of Results Out of Control Limits	# of Results Within Control Limits	% Within Control Limits
Field Duplicates	120	0	120	100%
Lab Duplicates	294	0	294	100%
Overall	**414**	**0**	**414**	**100%**

- **Accuracy** is determined by MS and LCS results that are within control limits. Following is a summary of the accuracy for this sampling event.

QC Type	Total Results	# of Results Out of Control Limits	# of Results Within Control Limits	% Within Control Limits
LCS	159	0	159	100%
Matrix Spikes	201	0	201	100%
Overall	**360**	**0**	**360**	**100%**

- **Completeness** is calculated by the number of valid (not rejected) data per number of planned data, expressed as a percentage. **The completeness goal for the ASARCO Post-RI/FS project is 90%. This goal was met for the September 2007 sampling event.** Following is a detailed summary of the completeness for this sampling event.

# of Planned Measurements	Actual # of Measurements	# of Rejected or Anomalous Measurements	# of Valid Measurements	Completeness
1609	1609	1	1609	100%

- **Completeness** can also be calculated by the number of non-qualified data per number of measurements. Following is a summary of non-qualified data completeness.

# of Measurements	# of Qualified Measurements	# Not Qualified	% Not Qualified
1609	27	1582	98.3%

- **In conclusion**, with the exception of rejected results, data collected in September 2007 for the ASARCO Post-RI/FS bi-monthly sample event are deemed acceptable and can be used for the purposes they were intended, providing the qualified data are used with caution. Qualified data may indicate a bias or lack of precision.

Data Validation Report by: Linda L. Tangen

Client Review by: Jon Nickel

REFERENCES

ASARCO 2002. *Interim Measures Work Plan Addendum, East Helena Facility.* ASARCO Consulting Inc. Revised May.

ASARCO 2007. *Addendum to Interim Measures Work Plan, East Helena Facility, Former Acid Plant Sediment Drying Area Slurry Wall, Monitoring, Operation, and Maintenance work Plan.* ASARCO LLC. October 18, 2006. Revision April 20, 2007.

EPA 1983. *Methods for Chemical Analysis of Water and Wastes.* United States Environmental Protection Agency. March.

EPA 1986. *Test Method for Evaluating Solid Waste: Physical/Chemical Methods 3rd Ed. 4 Vols.* United States Environmental Protection Agency. November.

EPA 2001. *USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis.* United States Environmental Protection Agency. Document Number ILM05.2. December.

EPA 2002. *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* United States Environmental Protection Agency. July.

APPENDIX 1

TABLES

TABLE 1.

DATA VALIDATION CODES AND DEFINITIONS

CODE	DEFINITION
A	Anomalous data. (Not an EPA code.)
J	The associated numerical value is an estimated quantity because quality control criteria were not met. A bias was not determined.
J-	The associated numerical value is estimated with a low bias because quality control criteria were not met.
J+	The estimated numerical value is estimated with a high bias because quality control criteria were not met.
UJ	Blank contamination. Indicates a possible high bias and/or false positive. The associated value is an estimate.
R	Quality control indicates that the data are unusable (compound may or may not be present).

Table 2. Summary of Qualified Data
East Helena Post RI Bi-Monthly Sample Event
September 2007

Station Name / Field Sample ID / Parameter	Samp Date	Value	Unit	Flag	QC Type-Exceedance*
APSD-4					
AEH-0709-147	**9/12/2007**				
Iron (Fe) DIS		0.14	mg/L	UJ	DI Blank - Result > PDLG
TDS (Measured at 180 C)		185	mg/L	UJ	DI Blank - Result > PDLG
DH-11					
AEH-0709-100	**9/4/2007**				
Arsenic (As) DIS		0.002	mg/L	UJ	Rinsate - Result > PDLG
DH-21					
AEH-0709-163	**9/13/2007**				
Oxygen (O) (DIS) (Fld)		5.47	mg/L	R	Field Notes-Air in Tubing
DH-58					
AEH-0709-143	**9/12/2007**				
Iron (Fe) DIS		0.02	mg/L	UJ	DI Blank - Result > PDLG
EH-100					
AEH-0709-151	**9/12/2007**				
Iron (Fe) DIS		0.05	mg/L	UJ	DI Blank - Result > PDLG
EH-101					
AEH-0709-120	**9/6/2007**				
Arsenic (As) DIS		0.006	mg/L	UJ	Rinsate - Result > PDLG
Iron (Fe) DIS		0.02	mg/L	UJ	DI Blank - Result>PDLG
AEH-0709-121	**9/6/2007**				
Arsenic (As) DIS		0.006	mg/L	UJ	Rinsate - Result > PDLG
EH-107					
AEH-0709-119	**9/6/2007**				
Arsenic (As) DIS		0.008	mg/L	UJ	Rinsate - Result > PDLG
Iron (Fe) DIS		0.05	mg/L	UJ	DI Blank - Result>PDLG
EH-110					

*Note: LCS = Laboratory Control Sample; MS = Matrix Spike; MSD = MS Duplicate; PDLG = Project Detection Limit Goal; RL = Reporting Limit.

Table 2. Summary of Qualified Data

East Helena Post RI Bi-Monthly Sample Event

September 2007

Station Name / Field Sample ID / Parameter	Samp Date	Value	Unit	Flag	QC Type-Exceedance*
EH-110					
AEH-0709-122	**9/6/2007**				
Arsenic (As) DIS		0.008	mg/L	UJ	Rinsate - Result > PDLG
Iron (Fe) DIS		0.02	mg/L	UJ	DI Blank - Result>PDLG
EH-111					
AEH-0709-149	**9/12/2007**				
Iron (Fe) DIS		0.04	mg/L	UJ	DI Blank - Result > PDLG
AEH-0709-150	**9/12/2007**				
Iron (Fe) DIS		0.03	mg/L	UJ	DI Blank - Result > PDLG
EH-112					
AEH-0709-130	**9/6/2007**				
Arsenic (As) DIS		0.005	mg/L	UJ	Rinsate - Result > PDLG
EH-113					
AEH-0709-127	**9/6/2007**				
Arsenic (As) DIS		0.006	mg/L	UJ	Rinsate - Result > PDLG
Iron (Fe) DIS		0.02	mg/L	UJ	DI Blank - Result>PDLG
EH-114					
AEH-0709-123	**9/6/2007**				
Arsenic (As) DIS		0.004	mg/L	UJ	Rinsate - Result > PDLG
Iron (Fe) DIS		0.02	mg/L	UJ	DI Blank - Result>PDLG
EH-116					
AEH-0709-124	**9/6/2007**				
Arsenic (As) DIS		0.006	mg/L	UJ	Rinsate - Result > PDLG
Iron (Fe) DIS		0.03	mg/L	UJ	DI Blank - Result>PDLG
EH-117					
AEH-0709-125	**9/6/2007**				
Arsenic (As) DIS		0.007	mg/L	UJ	Rinsate - Result > PDLG

*Note: LCS = Laboratory Control Sample; MS = Matrix Spike; MSD = MS Duplicate; PDLG = Project Detection Limit Goal; RL = Reporting Limit.

Table 2. Summary of Qualified Data

East Helena Post RI Bi-Monthly Sample Event

September 2007

Station Name / Field Sample ID / Parameter	Samp Date	Value	Unit	Flag	QC Type-Exceedance*
EH-117					
Iron (Fe) DIS		0.02	mg/L	UJ	DI Blank - Result>PDLG
EH-59					
AEH-0709-131	**9/6/2007**				
Iron (Fe) DIS		0.02	mg/L	UJ	DI Blank - Result>PDLG
EH-65					
AEH-0709-128	**9/6/2007**				
Arsenic (As) DIS		0.01	mg/L	UJ	Rinsate - Result > PDLG
Iron (Fe) DIS		0.04	mg/L	UJ	DI Blank - Result>PDLG

*Note: LCS = Laboratory Control Sample; MS = Matrix Spike; MSD = MS Duplicate; PDLG = Project Detection Limit Goal; RL = Reporting Limit.

APPENDIX 2

DATABASE

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Table of Contents by Station Type

Page	Station Type	Station Name
1	Groundwater	APSD-1
2	Groundwater	APSD-2
2	Groundwater	APSD-3
2	Groundwater	APSD-4
1	Groundwater	APSD-15
1	Groundwater	APSD-16
3	Groundwater	DH-2
4	Groundwater	DH-3
6	Groundwater	DH-7
3	Groundwater	DH-11
3	Groundwater	DH-21
4	Groundwater	DH-29
4	Groundwater	DH-58
5	Groundwater	DH-59
5	Groundwater	DH-60
5	Groundwater	DH-64
12	Groundwater	EH-50
12	Groundwater	EH-51
12	Groundwater	EH-52
13	Groundwater	EH-53
13	Groundwater	EH-54
13	Groundwater	EH-57A
14	Groundwater	EH-58
14	Groundwater	EH-59
14	Groundwater	EH-60
15	Groundwater	EH-61
15	Groundwater	EH-62
15	Groundwater	EH-63
16	Groundwater	EH-64
16	Groundwater	EH-65
6	Groundwater	EH-100
6	Groundwater	EH-101
7	Groundwater	EH-102
7	Groundwater	EH-103
8	Groundwater	EH-104
8	Groundwater	EH-106
8	Groundwater	EH-107
9	Groundwater	EH-109
9	Groundwater	EH-110
9	Groundwater	EH-111
10	Groundwater	EH-112
10	Groundwater	EH-113
10	Groundwater	EH-114

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 10/17/2007 2:09:09 PM

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ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Table of Contents by Station Type

Page	Station Type	Station Name
11	Groundwater	EH-115
11	Groundwater	EH-116
11	Groundwater	EH-117
16	Groundwater	MW-3
17	Groundwater	MW-7
17	Quality Control	DI BLANK
18	Quality Control	RINSATE
19	Quality Control	STANDARD

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

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ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Table of Contents By Lab Sample ID

Page	Lab Sample ID	Sample ID	Sample Date	Station Name
3	AEH-0709-DH2	AEH-0709-DH2	9/6/2007	DH-2
13	AEH-0709-EH54	AEH-0709-EH54	9/6/2007	EH-54
3	H07090010-001	AEH-0709-100	9/4/2007	DH-11
6	H07090010-002	AEH-0709-101	9/4/2007	DH-7
6	H07090010-003	AEH-0709-102	9/4/2007	DH-7
18	H07090010-004	AEH-0709-103	9/4/2007	RINSATE
14	H07090010-005	AEH-0709-104	9/4/2007	EH-58
7	H07090010-006	AEH-0709-105	9/4/2007	EH-102
17	H07090010-007	AEH-0709-106	9/4/2007	DI BLANK
15	H07090032-001	AEH-0709-107	9/5/2007	EH-62
13	H07090032-002	AEH-0709-108	9/5/2007	EH-57A
17	H07090032-003	AEH-0709-109	9/5/2007	DI BLANK
13	H07090032-004	AEH-0709-110	9/5/2007	EH-53
15	H07090032-006	AEH-0709-111	9/5/2007	EH-63
15	H07090032-007	AEH-0709-112	9/5/2007	EH-63
16	H07090032-008	AEH-0709-113	9/5/2007	EH-64
11	H07090032-009	AEH-0709-114	9/5/2007	EH-115
18	H07090032-010	AEH-0709-115	9/5/2007	RINSATE
8	H07090032-011	AEH-0709-116	9/5/2007	EH-104
15	H07090032-012	AEH-0709-117	9/5/2007	EH-61
7	H07090032-014	AEH-0709-118	9/5/2007	EH-103
8	H07090052-001	AEH-0709-119	9/6/2007	EH-107
6	H07090052-002	AEH-0709-120	9/6/2007	EH-101
7	H07090052-003	AEH-0709-121	9/6/2007	EH-101
9	H07090052-004	AEH-0709-122	9/6/2007	EH-110
10	H07090052-005	AEH-0709-123	9/6/2007	EH-114
11	H07090052-006	AEH-0709-124	9/6/2007	EH-116
11	H07090052-007	AEH-0709-125	9/6/2007	EH-117
18	H07090052-008	AEH-0709-126	9/6/2007	RINSATE
10	H07090052-009	AEH-0709-127	9/6/2007	EH-113
16	H07090052-010	AEH-0709-128	9/6/2007	EH-65
17	H07090052-011	AEH-0709-129	9/6/2007	DI BLANK
10	H07090052-012	AEH-0709-130	9/6/2007	EH-112
14	H07090052-013	AEH-0709-131	9/6/2007	EH-59
16	H07090102-001	AEH-0709-132	9/11/2007	MW-3
17	H07090102-002	AEH-0709-133	9/11/2007	MW-7
4	H07090102-003	AEH-0709-134	9/11/2007	DH-3
17	H07090102-004	AEH-0709-135	9/11/2007	DI BLANK
4	H07090102-005	AEH-0709-136	9/11/2007	DH-3
12	H07090102-006	AEH-0709-137	9/11/2007	EH-50
19	H07090102-007	AEH-0709-138	9/11/2007	RINSATE
12	H07090102-008	AEH-0709-139	9/11/2007	EH-51
12	H07090102-009	AEH-0709-140	9/11/2007	EH-52

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

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ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Table of Contents By Lab Sample ID

Page	Lab Sample ID	Sample ID	Sample Date	Station Name
12	H07090115-001	AEH-0709-141	9/12/2007	EH-52
19	H07090115-002	AEH-0709-142	9/12/2007	RINSATE
4	H07090115-003	AEH-0709-143	9/12/2007	DH-58
1	H07090115-004	AEH-0709-144	9/12/2007	APSD-1
1	H07090115-005	AEH-0709-145	9/12/2007	APSD-15
1	H07090115-006	AEH-0709-146	9/12/2007	APSD-16
2	H07090115-007	AEH-0709-147	9/12/2007	APSD-4
2	H07090115-008	AEH-0709-148	9/12/2007	APSD-3
9	H07090115-009	AEH-0709-149	9/12/2007	EH-111
9	H07090115-010	AEH-0709-150	9/12/2007	EH-111
6	H07090115-011	AEH-0709-151	9/12/2007	EH-100
18	H07090115-012	AEH-0709-152	9/12/2007	DI BLANK
14	H07090135-001	AEH-0709-153	9/13/2007	EH-60
5	H07090135-002	AEH-0709-154	9/13/2007	DH-60
8	H07090135-003	AEH-0709-155	9/13/2007	EH-106
18	H07090135-004	AEH-0709-156	9/13/2007	DI BLANK
9	H07090135-005	AEH-0709-157	9/13/2007	EH-109
19	H07090135-006	AEH-0709-158	9/13/2007	RINSATE
5	H07090135-007	AEH-0709-159	9/13/2007	DH-59
5	H07090135-008	AEH-0709-160	9/13/2007	DH-64
4	H07090135-009	AEH-0709-161	9/13/2007	DH-29
2	H07090135-010	AEH-0709-162	9/13/2007	APSD-2
3	H07090135-011	AEH-0709-163	9/13/2007	DH-21
19	H07090135-012	ERA Standard 506	9/13/2007	STANDARD
19	H07090135-013	ERA Standard 507	9/13/2007	STANDARD
20	H07090135-014	ERA Standard 740	9/13/2007	STANDARD

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

Run Time: 10/17/2007 2:09:09 PM

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ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Table of Contents by Sample ID

Page	Sample ID	Lab Sample ID	Sample Date	Station Name
3	AEH-0709-100	H07090010-001	9/4/2007	DH-11
6	AEH-0709-101	H07090010-002	9/4/2007	DH-7
6	AEH-0709-102	H07090010-003	9/4/2007	DH-7
18	AEH-0709-103	H07090010-004	9/4/2007	RINSATE
14	AEH-0709-104	H07090010-005	9/4/2007	EH-58
7	AEH-0709-105	H07090010-006	9/4/2007	EH-102
17	AEH-0709-106	H07090010-007	9/4/2007	DI BLANK
15	AEH-0709-107	H07090032-001	9/5/2007	EH-62
13	AEH-0709-108	H07090032-002	9/5/2007	EH-57A
17	AEH-0709-109	H07090032-003	9/5/2007	DI BLANK
13	AEH-0709-110	H07090032-004	9/5/2007	EH-53
15	AEH-0709-111	H07090032-006	9/5/2007	EH-63
15	AEH-0709-112	H07090032-007	9/5/2007	EH-63
16	AEH-0709-113	H07090032-008	9/5/2007	EH-64
11	AEH-0709-114	H07090032-009	9/5/2007	EH-115
18	AEH-0709-115	H07090032-010	9/5/2007	RINSATE
8	AEH-0709-116	H07090032-011	9/5/2007	EH-104
15	AEH-0709-117	H07090032-012	9/5/2007	EH-61
7	AEH-0709-118	H07090032-014	9/5/2007	EH-103
8	AEH-0709-119	H07090052-001	9/6/2007	EH-107
6	AEH-0709-120	H07090052-002	9/6/2007	EH-101
7	AEH-0709-121	H07090052-003	9/6/2007	EH-101
9	AEH-0709-122	H07090052-004	9/6/2007	EH-110
10	AEH-0709-123	H07090052-005	9/6/2007	EH-114
11	AEH-0709-124	H07090052-006	9/6/2007	EH-116
11	AEH-0709-125	H07090052-007	9/6/2007	EH-117
18	AEH-0709-126	H07090052-008	9/6/2007	RINSATE
10	AEH-0709-127	H07090052-009	9/6/2007	EH-113
16	AEH-0709-128	H07090052-010	9/6/2007	EH-65
17	AEH-0709-129	H07090052-011	9/6/2007	DI BLANK
10	AEH-0709-130	H07090052-012	9/6/2007	EH-112
14	AEH-0709-131	H07090052-013	9/6/2007	EH-59
16	AEH-0709-132	H07090102-001	9/11/2007	MW-3
17	AEH-0709-133	H07090102-002	9/11/2007	MW-7
4	AEH-0709-134	H07090102-003	9/11/2007	DH-3
17	AEH-0709-135	H07090102-004	9/11/2007	DI BLANK
4	AEH-0709-136	H07090102-005	9/11/2007	DH-3
12	AEH-0709-137	H07090102-006	9/11/2007	EH-50
19	AEH-0709-138	H07090102-007	9/11/2007	RINSATE
12	AEH-0709-139	H07090102-008	9/11/2007	EH-51
12	AEH-0709-140	H07090102-009	9/11/2007	EH-52
12	AEH-0709-141	H07090115-001	9/12/2007	EH-52
19	AEH-0709-142	H07090115-002	9/12/2007	RINSATE

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

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ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

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1	AEH-0709-144	H07090115-004	9/12/2007	APSD-1
1	AEH-0709-145	H07090115-005	9/12/2007	APSD-15
1	AEH-0709-146	H07090115-006	9/12/2007	APSD-16
2	AEH-0709-147	H07090115-007	9/12/2007	APSD-4
2	AEH-0709-148	H07090115-008	9/12/2007	APSD-3
9	AEH-0709-149	H07090115-009	9/12/2007	EH-111
9	AEH-0709-150	H07090115-010	9/12/2007	EH-111
6	AEH-0709-151	H07090115-011	9/12/2007	EH-100
18	AEH-0709-152	H07090115-012	9/12/2007	DI BLANK
14	AEH-0709-153	H07090135-001	9/13/2007	EH-60
5	AEH-0709-154	H07090135-002	9/13/2007	DH-60
8	AEH-0709-155	H07090135-003	9/13/2007	EH-106
18	AEH-0709-156	H07090135-004	9/13/2007	DI BLANK
9	AEH-0709-157	H07090135-005	9/13/2007	EH-109
19	AEH-0709-158	H07090135-006	9/13/2007	RINSATE
5	AEH-0709-159	H07090135-007	9/13/2007	DH-59
5	AEH-0709-160	H07090135-008	9/13/2007	DH-64
4	AEH-0709-161	H07090135-009	9/13/2007	DH-29
2	AEH-0709-162	H07090135-010	9/13/2007	APSD-2
3	AEH-0709-163	H07090135-011	9/13/2007	DH-21
3	AEH-0709-DH2	AEH-0709-DH2	9/6/2007	DH-2
13	AEH-0709-EH54	AEH-0709-EH54	9/6/2007	EH-54
19	ERA Standard 506	H07090135-012	9/13/2007	STANDARD
19	ERA Standard 507	H07090135-013	9/13/2007	STANDARD
20	ERA Standard 740	H07090135-014	9/13/2007	STANDARD

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

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ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	APSD-1	APSD-15	APSD-16
Water	SAMPLE DATE	9/12/2007	9/12/2007	9/12/2007
	SAMPLE TIME	10:40	11:15	11:40
	LAB	ELI	ELI	ELI
	LAB NUMBER	H07090115-004	H07090115-005	H07090115-006
	SAMPLE NUMBER	AEH-0709-144	AEH-0709-145	AEH-0709-146
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION			
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	1000	250	270
	Calcium (Ca) (DIS)	168	57	56
	Chloride (Cl)	157	11	10
	Magnesium (Mg) (DIS)	41	14	12
	Potassium (K) (DIS)	15	7	5
	Sodium (Na) (DIS)	180	24	27
	Sulfate (SO4)	30	81	71
	Total Alkalinity As CACO3	850	200	220
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	0.549	1.601	2.368
	Arsenic (As) (TOT)	0.55	5.51	6.99
	Arsenic +3 (DIS)	0.407	1.2	1.9
	Arsenic +5 (DIS)	0.0355	0.282	0.245
	Cadmium (Cd) (DIS)	<0.001	0.003	<0.001
	Cadmium (Cd) (TOT)	0.003	0.025	0.02
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004
	Copper (Cu) (TOT)	<0.004	0.144	0.09
	Iron (Fe) (DIS)	19.66	6.1	7.07
	Iron (Fe) (TOT)	17.2	47	21.5
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Lead (Pb) (TOT)	<0.005	0.61	0.38
	Manganese (Mn) (DIS)	3.88	5.02	4.16
	Manganese (Mn) (TOT)	3.58	5.69	4.12
	Zinc (Zn) (DIS)	<0.01	0.22	0.15
	Zinc (Zn) (TOT)	0.03	0.85	0.52
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	0.62	1.64	0.11
	pH	6.8	7	7.1
	Depth To Water Level (ft)	7.75	10.82	6.38
	pH (Fld)	6.61	6.57	6.73
	SC (umhos/cm at 25 C) (Fld)	1981	538	525
	SC (umhos/cm at 25 C)	1780	511	495
	Total Suspended Solids	65	1370	260
	TDS (Measured at 180 C)	1120	332	313
	Water Temperature (C) (Fld)	19.7	11.5	11.4

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

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ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	APSD-2	APSD-3	APSD-4
Water	SAMPLE DATE	9/13/2007	9/12/2007	9/12/2007
	SAMPLE TIME	13:55	13:40	13:10
	LAB	ELI	ELI	ELI
	LAB NUMBER	H07090135-010	H07090115-008	H07090115-007
	SAMPLE NUMBER	AEH-0709-162	AEH-0709-148	AEH-0709-147
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION	Temp Due to Tube		
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	1300	200	150
	Calcium (Ca) (DIS)	628	121	36
	Chloride (Cl)	112	19	4
	Magnesium (Mg) (DIS)	179	22	7
	Potassium (K) (DIS)	43	12	5
	Sodium (Na) (DIS)	267	50	11
	Sulfate (SO4)	1550	307	56
	Total Alkalinity As CACO3	1100	170	120
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	78.1	4.78	0.172
	Arsenic (As) (TOT)	63.7	5.22	0.163
	Arsenic -3 (DIS)	42.6	2.86	0.0296
	Arsenic +5 (DIS)	21.6	1.4	0.148
	Cadmium (Cd) (DIS)	<0.001	1.709	<0.001
	Cadmium (Cd) (TOT)	0.011	1.76	<0.001
	Copper (Cu) (DIS)	0.005	0.008	<0.004
	Copper (Cu) (TOT)	0.013	0.014	<0.004
	Iron (Fe) (DIS)	199	5.85	0.14 UJ
	Iron (Fe) (TOT)	179	6.48	0.16
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Lead (Pb) (TOT)	0.056	<0.005	<0.005
	Manganese (Mn) (DIS)	18.34	3.25	0.28
	Manganese (Mn) (TOT)	14	3.21	0.27
	Selenium (Se) (DIS)	0.023		
	Zinc (Zn) (DIS)	0.06	5.76	0.04
	Zinc (Zn) (TOT)	0.18	5.6	0.04
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	0.42	0.63	0.41
	pH	6.8	6.7	6.7
	Depth To Water Level (ft)	12.49	10.52	10.61
	pH (Fld)	6.71	6.39	6.32
	SC (umhos/cm at 25 C) (Fld)	4547	1035	283
	SC (umhos/cm at 25 C)	6450	954	294
	Total Suspended Solids	501	18	<10
	TDS (Measured at 180 C)	3550	703	185 UJ
	Water Temperature (C) (Fld)	21.4	19.6	19.3

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	DH-11	DH-2	DH-21
Water	SAMPLE DATE	9/4/2007	9/6/2007	9/13/2007
	SAMPLE TIME	11:25	00:00	14:30
	LAB	ELI	Hydrometrics	ELI
	LAB NUMBER	H07090010-001	AEH-0709-DH2	H07090135-011
	SAMPLE NUMBER	AEH-0709-100	AEH-0709-DH2	AEH-0709-163
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION		:o Samp-Low SWL	DO Error
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	160		710
	Calcium (Ca) (DIS)	56		2
	Chloride (Cl)	14		45
	Magnesium (Mg) (DIS)	13		<1
	Potassium (K) (DIS)	4		9
	Sodium (Na) (DIS)	62		924
	Sulfate (SO4)	138		826
	Total Alkalinity As CACO3	130		1000
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	0.002 UJ		165.8
	Cadmium (Cd) (DIS)	<0.001		0.002
	Copper (Cu) (DIS)	0.004		0.007
	Iron (Fe) (DIS)	0.03		0.21
	Lead (Pb) (DIS)	<0.005		<0.005
	Manganese (Mn) (DIS)	0.18		0.02
	Selenium (Se) (DIS)	<0.005		0.024
	Zinc (Zn) (DIS)	<0.01		0.05
Other: ppm unless noted				
	Oxidation Reduction Potential	19.2		
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	0.16		5.47 R
	pH	7.5		9.9
	Depth To Water Level (ft)	14.62	57.45	24.14
	pH (Fld)	6.85		9.97
	SC (umhos/cm at 25 C) (Fld)	607		3690
	SC (umhos/cm at 25 C)	601		3490
	Total Suspended Solids	<10		<10
	TDS (Measured at 180 C)	396		2600
	Water Temperature (C) (Fld)	10.64		15.3

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

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ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	DH-29	DH-3	DH-3	DH-58
Water	SAMPLE DATE	9/13/2007	9/11/2007	9/11/2007	9/12/2007
	SAMPLE TIME	13:10	12:00	12:05	09:25
	LAB	ELI	ELI	ELI	ELI
	LAB NUMBER	H07090135-009	H07090102-003	H07090102-005	H07090115-003
	SAMPLE NUMBER	AEH-0709-161	AEH-0709-134	AEH-0709-136	AEH-0709-143
	TYPE	Groundwater	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI	RI
	DESCRIPTION				
	REMARKS			Field Duplicate	
Common Ions (mg/L): ppm unless noted					
	Bicarbonate (HCO3)	140	230	220	210
	Calcium (Ca) (DIS)	192	64	64	68
	Chloride (Cl)	135	15	15	21
	Magnesium (Mg) (DIS)	64	14	14	10
	Potassium (K) (DIS)	36	5	5	25
	Sodium (Na) (DIS)	210	23	23	157
	Sulfate (SO4)	1030	75	78	342
	Total Alkalinity As CACO3	110	190	180	170
Metals (mg/L): ppm unless noted					
	Arsenic (As) (DIS)	25.9	0.009	0.009	2.002
	Arsenic (As) (TOT)	37.2			
	Arsenic -3 (DIS)	22			
	Arsenic +5 (DIS)	2.51			
	Cadmium (Cd) (DIS)	0.025	<0.001	<0.001	<0.001
	Cadmium (Cd) (TOT)	0.311			
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004	<0.004
	Copper (Cu) (TOT)	0.008			
	Iron (Fe) (DIS)	65.69	0.02	<0.02	0.02 UJ
	Iron (Fe) (TOT)	82.5			
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005	<0.005
	Lead (Pb) (TOT)	0.057			
	Manganese (Mn) (DIS)	22.66	<0.01	<0.01	<0.01
	Manganese (Mn) (TOT)	23.8			
	Selenium (Se) (DIS)		<0.005	<0.005	0.072
	Zinc (Zn) (DIS)	24.46	<0.01	<0.01	<0.01
	Zinc (Zn) (TOT)	27.6			
Physical/Fld-Lab: ppm unless noted					
	Oxygen (O) (DIS) (Fld)	0.64	3.69		1.71
	pH	6.5	7.3	7.2	7.1
	Depth To Water Level (ft)	9.54	29.08		17.22
	pH (Fld)	6.15	6.9		6.69
	SC (umhos/cm at 25 C) (Fld)	4120	529		1067
	SC (umhos/cm at 25 C)	2450	475	482	1080
	Total Suspended Solids	259	<10	<10	32
	TDS (Measured at 180 C)	1870	347	349	756
	Water Temperature (C) (Fld)	14.9	10.4		13.9

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	DH-59	DH-60	DH-64
Water	SAMPLE DATE	9/13/2007	9/13/2007	9/13/2007
	SAMPLE TIME	11:00	09:25	11:30
	LAB	ELI	ELI	ELI
	LAB NUMBER	H07090135-007	H07090135-002	H07090135-008
	SAMPLE NUMBER	AEH-0709-159	AEH-0709-154	AEH-0709-160
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION			
	REMARKS		Field Duplicate	
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	140	310	360
	Calcium (Ca) (DIS)	53	95	36
	Chloride (Cl)	10	87	47
	Magnesium (Mg) (DIS)	8	26	12
	Potassium (K) (DIS)	20	12	13
	Sodium (Na) (DIS)	50	240	396
	Sulfate (SO4)	128	401	494
	Total Alkalinity As CACO3	110	260	300
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	14.16	7.145	32.6
	Cadmium (Cd) (DIS)	0.074	<0.001	0.017
	Copper (Cu) (DIS)	0.004	<0.004	<0.004
	Iron (Fe) (DIS)	0.55	0.12	1.58
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	1.92	8.27	2.55
	Selenium (Se) (DIS)	0.007	0.013	0.015
	Zinc (Zn) (DIS)	0.23	0.01	0.41
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	0.34		0.28
	pH	6.6	6.8	6.9
	Depth To Water Level (ft)	17.34		30.18
	pH (Fld)	6.44		6.69
	SC (umhos/cm at 25 C) (Fld)	618		1961
	SC (umhos/cm at 25 C)	598	1560	1890
	Total Suspended Solids	<10	<10	<10
	TDS (Measured at 180 C)	392	1110	1320
	Water Temperature (C) (Fld)	11.9		12.5

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	DH-7	DH-7	EH-100	EH-101
Water	SAMPLE DATE	9/4/2007	9/4/2007	9/12/2007	9/6/2007
	SAMPLE TIME	12:10	12:15	15:10	09:35
	LAB	ELI	ELI	ELI	ELI
	LAB NUMBER	H07090010-002	H07090010-003	H07090115-011	H07090052-002
	SAMPLE NUMBER	AEH-0709-101	AEH-0709-102	AEH-0709-151	AEH-0709-120
	TYPE	Groundwater	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI	RI
	DESCRIPTION				Split w/EPA
	REMARKS		Field Duplicate		
Common Ions (mg/L): ppm unless noted					
	Bicarbonate (HCO3)	120	120	140	170
	Calcium (Ca) (DIS)	40	41	159	146
	Chloride (Cl)	4	5	117	42
	Magnesium (Mg) (DIS)	7	8	54	26
	Potassium (K) (DIS)	5	5	10	31
	Sodium (Na) (DIS)	19	18	127	153
	Sulfate (SO4)	63	64	568	632
	Total Alkalinity As CACO3	98	99	120	140
Metals (mg/L): ppm unless noted					
	Arsenic (As) (DIS)	<0.002	<0.002	3.64	0.006 UJ
	Cadmium (Cd) (DIS)	<0.001	<0.001	0.004	<0.001
	Copper (Cu) (DIS)	<0.004	<0.004	0.007	<0.004
	Iron (Fe) (DIS)	<0.02	<0.02	0.05 UJ	0.02 UJ
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01	9.89	<0.01
	Selenium (Se) (DIS)	<0.005	<0.005	0.946	0.275
	Zinc (Zn) (DIS)	<0.01	<0.01	0.47	<0.01
Other: ppm unless noted					
	Oxidation Reduction Potential	91.4			99.2
Physical/Fld-Lab: ppm unless noted					
	Oxygen (O) (DIS) (Fld)	1.6		0.16	3.72
	pH	7.4	7.2	6.5	7.1
	Depth To Water Level (ft)	20.83		22.74	13.45
	pH (Fld)	6.67		6.05	6.61
	SC (umhos/cm at 25 C) (Fld)	349		1744	1537
	SC (umhos/cm at 25 C)	354	354	1610	1330
	Total Suspended Solids	<10	<10	<10	<10
	TDS (Measured at 180 C)	228	225	1300	1130
	Water Temperature (C) (Fld)	10.65		12.1	11.07

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	EH-101	EH-102	EH-103
Water	SAMPLE DATE	9/6/2007	9/4/2007	9/5/2007
	SAMPLE TIME	09:45	15:20	16:10
	LAB	ELI	ELI	ELI
	LAB NUMBER	H07090052-003	H07090010-006	H07090032-014
	SAMPLE NUMBER	AEH-0709-121	AEH-0709-105	AEH-0709-118
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION	Split w/EPA		
	REMARKS	Field Duplicate		
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	170	140	200
	Calcium (Ca) (DIS)	144	66	188
	Chloride (Cl)	37	17	57
	Magnesium (Mg) (DIS)	26	14	37
	Potassium (K) (DIS)	31	8	10
	Sodium (Na) (DIS)	152	63	120
	Sulfate (SO4)	611	190	634
	Total Alkalinity As CACO3	140	110	170
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	0.006 UJ	<0.002	0.006
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	<0.02	<0.02	0.02
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01	0.53
	Selenium (Se) (DIS)	0.271	0.058	0.112
	Zinc (Zn) (DIS)	<0.01	<0.01	<0.01
Other: ppm unless noted				
	Oxidation Reduction Potential		119.6	36.4
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)		2.95	0.04
	pH	7.2	7.3	6.9
	Depth To Water Level (ft)		9.11	20.35
	pH (Fld)		6.66	6.63
	SC (umhos/cm at 25 C) (Fld)		721	1663
	SC (umhos/cm at 25 C)	1330	708	1580
	Total Suspended Solids	<10	<10	<10
	TDS (Measured at 180 C)	1140	492	1270
	Water Temperature (C) (Fld)		10.05	12.75

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

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ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	EH-104	EH-106	EH-107
Water	SAMPLE DATE	9/5/2007	9/13/2007	9/6/2007
	SAMPLE TIME	14:10	09:50	08:20
	LAB	ELI	ELI	ELI
	LAB NUMBER	H07090032-011	H07090135-003	H07090052-001
	SAMPLE NUMBER	AEH-0709-116	AEH-0709-155	AEH-0709-119
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION			
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	210	190	200
	Calcium (Ca) (DIS)	64	92	239
	Chloride (Cl)	25	82	87
	Magnesium (Mg) (DIS)	15	29	50
	Potassium (K) (DIS)	4	12	8
	Sodium (Na) (DIS)	65	237	168
	Sulfate (SO4)	183	503	750
	Total Alkalinity As CACO3	170	150	160
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	<0.002	12.08	0.008 UJ
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	0.005	<0.004
	Iron (Fe) (DIS)	0.02	0.05	0.05 UJ
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	16.08	0.13
	Selenium (Se) (DIS)	0.027	0.128	0.18
	Zinc (Zn) (DIS)	<0.01	0.09	<0.01
Other: ppm unless noted				
	Oxidation Reduction Potential	52.6		71.8
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	6.7	0.74	0.18
	pH	7.4	6.4	7
	Depth To Water Level (ft)	25	22.72	18.37
	pH (Fld)	7.2	6.2	6.42
	SC (umhos/cm at 25 C) (Fld)	753	1658	1970
	SC (umhos/cm at 25 C)	746	1580	1690
	Total Suspended Solids	<10	94	<10
	TDS (Measured at 180 C)	490	1180	1560
	Water Temperature (C) (Fld)	11.01	11.8	12.02

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	EH-109	EH-110	EH-111	EH-111
Water	SAMPLE DATE	9/13/2007	9/6/2007	9/12/2007	9/12/2007
	SAMPLE TIME	10:45	10:20	14:15	14:30
	LAB	ELI	ELI	ELI	ELI
	LAB NUMBER	H07090135-005	H07090052-004	H07090115-009	H07090115-010
	SAMPLE NUMBER	AEH-0709-157	AEH-0709-122	AEH-0709-149	AEH-0709-150
	TYPE	Groundwater	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI	RI
	DESCRIPTION				
	REMARKS				Field Duplicate
Common Ions (mg/L): ppm unless noted					
	Bicarbonate (HCO3)	270	210	190	190
	Calcium (Ca) (DIS)	82	268	92	95
	Chloride (Cl)	57	65	87	80
	Magnesium (Mg) (DIS)	22	51	24	25
	Potassium (K) (DIS)	11	12	12	12
	Sodium (Na) (DIS)	257	229	261	255
	Sulfate (SO4)	456	918	532	521
	Total Alkalinity As CACO3	220	170	160	160
Metals (mg/L): ppm unless noted					
	Arsenic (As) (DIS)	14.13	0.008 UJ	2.418	2.438
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	0.005	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	0.07	0.02 UJ	0.04 UJ	0.03 UJ
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	9.14	0.02	4.58	4.68
	Selenium (Se) (DIS)	0.019	0.432	0.134	0.135
	Zinc (Zn) (DIS)	0.58	<0.01	<0.01	<0.01
Other: ppm unless noted					
	Oxidation Reduction Potential		135.3		
Physical/Fld-Lab: ppm unless noted					
	Oxygen (O) (DIS) (Fld)	0.18	0.07	0.21	
	pH	6.8	7.1	6.7	6.6
	Depth To Water Level (ft)	20.06	15.8	22.33	
	pH (Fld)	6.51	6.61	6.31	
	SC (umhos/cm at 25 C) (Fld)	1644	2312	1717	
	SC (umhos/cm at 25 C)	1540	1940	1630	1630
	Total Suspended Solids	<10	<10	<10	<10
	TDS (Measured at 180 C)	1130	1840	1190	1180
	Water Temperature (C) (Fld)	12.4	12.29	12	

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	EH-112	EH-113	EH-114
Water	SAMPLE DATE	9/6/2007	9/6/2007	9/6/2007
	SAMPLE TIME	15:05	13:55	11:00
	LAB	ELI	ELI	ELI
	LAB NUMBER	H07090052-012	H07090052-009	H07090052-005
	SAMPLE NUMBER	AEH-0709-130	AEH-0709-127	AEH-0709-123
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION	Split w/EPA	Split w/EPA	Split w/EPA
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	180	250	190
	Calcium (Ca) (DIS)	119	126	106
	Chloride (Cl)	85	72	51
	Magnesium (Mg) (DIS)	27	37	26
	Potassium (K) (DIS)	7	6	6
	Sodium (Na) (DIS)	186	150	103
	Sulfate (SO4)	536	449	309
	Total Alkalinity As CACO3	150	200	160
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	0.005 UJ	0.006 UJ	0.004 UJ
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	<0.02	0.02 UJ	0.02 UJ
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01	<0.01
	Selenium (Se) (DIS)	0.044	0.173	0.222
	Zinc (Zn) (DIS)	<0.01	<0.01	<0.01
Other: ppm unless noted				
	Oxidation Reduction Potential	99.3	101.1	127.2
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	4.13	7.63	8.13
	pH	6.8	7	7.2
	Depth To Water Level (ft)	21.47	21.41	24.97
	pH (Fld)	6.17	6.51	6.57
	SC (umhos/cm at 25 C) (Fld)	1561	1459	1097
	SC (umhos/cm at 25 C)	1370	1280	981
	Total Suspended Solids	<10	<10	<10
	TDS (Measured at 180 C)	1130	1030	762
	Water Temperature (C) (Fld)	12.22	11.82	11.33

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

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ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	EH-115	EH-116	EH-117
Water	SAMPLE DATE	9/5/2007	9/6/2007	9/6/2007
	SAMPLE TIME	13:20	11:30	11:55
	LAB	ELI	ELI	ELI
	LAB NUMBER	H07090032-009	H07090052-006	H07090052-007
	SAMPLE NUMBER	AEH-0709-114	AEH-0709-124	AEH-0709-125
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION		Split w/EPA	Split w/EPA
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	180	180	200
	Calcium (Ca) (DIS)	46	88	166
	Chloride (Cl)	19	72	97
	Magnesium (Mg) (DIS)	11	20	36
	Potassium (K) (DIS)	4	6	6
	Sodium (Na) (DIS)	57	209	181
	Sulfate (SO4)	117	473	533
	Total Alkalinity As CACO3	150	150	160
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	<0.002	0.006 UJ	0.007 UJ
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	0.02	0.03 UJ	0.02 UJ
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01	<0.01
	Selenium (Se) (DIS)	0.036	0.22	0.149
	Zinc (Zn) (DIS)	<0.01	<0.01	<0.01
Other: ppm unless noted				
	Oxidation Reduction Potential	53.7	122.4	110.9
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	6.08	0.15	1.7
	pH	7.3	6.8	6.8
	Depth To Water Level (ft)	25.86	23.81	22.28
	pH (Fld)	6.99	6.21	6.31
	SC (umhos/cm at 25 C) (Fld)	593	1489	1730
	SC (umhos/cm at 25 C)	587	1260	1430
	Total Suspended Solids	<10	22	11
	TDS (Measured at 180 C)	373	1040	1250
	Water Temperature (C) (Fld)	11.41	11.4	11.27

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	EH-50	EH-51	EH-52	EH-52
Water	SAMPLE DATE	9/11/2007	9/11/2007	9/11/2007	9/12/2007
	SAMPLE TIME	14:45	15:30	16:00	08:50
	LAB	ELI	ELI	ELI	ELI
	LAB NUMBER	H07090102-006	H07090102-008	H07090102-009	H07090115-001
	SAMPLE NUMBER	AEH-0709-137	AEH-0709-139	AEH-0709-140	AEH-0709-141
	TYPE	Groundwater	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI	RI
	DESCRIPTION				
	REMARKS				
Common Ions (mg/L): ppm unless noted					
	Bicarbonate (HCO3)	300	230	170	200
	Calcium (Ca) (DIS)	163	203	46	44
	Chloride (Cl)	122	62	10	15
	Magnesium (Mg) (DIS)	43	36	8	7
	Potassium (K) (DIS)	7	51	46	90
	Sodium (Na) (DIS)	171	229	57	152
	Sulfate (SO4)	501	836	169	364
	Total Alkalinity As CACO3	240	190	140	160
Metals (mg/L): ppm unless noted					
	Arsenic (As) (DIS)	0.123	0.275	0.384	1.444
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	0.03	0.04	0.02	<0.02
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01	<0.01	0.04
	Selenium (Se) (DIS)	0.162	0.448	0.029	0.061
	Zinc (Zn) (DIS)	0.01	0.01	0.01	<0.01
Physical/Fld-Lab: ppm unless noted					
	Oxygen (O) (DIS) (Fld)	5.27	5.27	2.77	0.24
	pH	6.9	7	7	7.5
	Depth To Water Level (ft)	22.14	13.05	7.68	6.78
	pH (Fld)	6.6	6.75	6.73	7.27
	SC (umhos/cm at 25 C) (Fld)	1722.	2154	675	1179
	SC (umhos/cm at 25 C)	1490	1820	618	1120
	Total Suspended Solids	<10	<10	<10	<10
	TDS (Measured at 180 C)	1230	1630	459	768
	Water Temperature (C) (Fld)	12.3	11.9	15.9	11.9

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	EH-53	EH-54	EH-57A
Water	SAMPLE DATE	9/5/2007	9/6/2007	9/5/2007
	SAMPLE TIME	10.25	00:00	09:40
	LAB	ELI	Hydrometrics	ELI
	LAB NUMBER	H07090032-004	AEH-0709-EH54	H07090032-002
	SAMPLE NUMBER	AEH-0709-110	AEH-0709-EH54	AEH-0709-108
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION	Split w/EPA	No Samp - Dry	
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	240		180
	Calcium (Ca) (DIS)	139		45
	Chloride (Cl)	85		14
	Magnesium (Mg) (DIS)	41		15
	Potassium (K) (DIS)	6		3
	Sodium (Na) (DIS)	119		25
	Sulfate (SO4)	472		79
	Total Alkalinity As CACO3	200		150
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	0.005		<0.002
	Cadmium (Cd) (DIS)	<0.001		<0.001
	Copper (Cu) (DIS)	<0.004		<0.004
	Iron (Fe) (DIS)	<0.02		<0.02
	Lead (Pb) (DIS)	<0.005		<0.005
	Manganese (Mn) (DIS)	<0.01		<0.01
	Selenium (Se) (DIS)	0.038		<0.005
	Zinc (Zn) (DIS)	<0.01		<0.01
Other: ppm unless noted				
	No Analysis		0.0	
	Oxidation Reduction Potential	98.1		80.7
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	6.84		9.33
	pH	7		7.2
	Depth To Water Level (ft)	22.64		28.78
	pH (Fld)	6.58		6.92
	SC (umhos/cm at 25 C) (Fld)	1516		472
	SC (umhos/cm at 25 C)	1430		467
	Total Suspended Solids	<10		<10
	TDS (Measured at 180 C)	1400		292
	Water Temperature (C) (Fld)	11.35		11.31

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	EH-58	EH-59	EH-60
Water	SAMPLE DATE	9/4/2007	9/6/2007	9/13/2007
	SAMPLE TIME	13:50	16:00	09:15
	LAB	ELI	ELI	ELI
	LAB NUMBER	H07090010-005	H07090052-013	H07090135-001
	SAMPLE NUMBER	AEH-0709-104	AEH-0709-131	AEH-0709-153
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION			
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	110	120	310
	Calcium (Ca) (DIS)	39	28	95
	Chloride (Cl)	7	5	90
	Magnesium (Mg) (DIS)	8	5	26
	Potassium (K) (DIS)	3	19	12
	Sodium (Na) (DIS)	17	26	242
	Sulfate (SO4)	70	49	413
	Total Alkalinity As CACO3	91	100	250
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	<0.002	0.019	7.145
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	<0.004	0.005
	Iron (Fe) (DIS)	<0.02	0.02 UJ	0.12
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01	8.32
	Selenium (Se) (DIS)	<0.005	<0.005	0.012
	Zinc (Zn) (DIS)	<0.01	<0.01	0.01
Other: ppm unless noted				
	Oxidation Reduction Potential	116.3	51.6	
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	6.95	1.43	1.04
	pH	7.4	7.2	6.7
	Depth To Water Level (ft)	15.51	7.94	18.56
	pH (Fld)	6.58	6.66	6.55
	SC (umhos/cm at 25 C) (Fld)	350	349	1636
	SC (umhos/cm at 25 C)	353	328	1560
	Total Suspended Solids	<10	<10	<10
	TDS (Measured at 180 C)	225	227	1100
	Water Temperature (C) (Fld)	11.06	13.74	12.6

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	EH-61	EH-62	EH-63	EH-63
Water	SAMPLE DATE	9/5/2007	9/5/2007	9/5/2007	9/5/2007
	SAMPLE TIME	15:20	08:40	10:55	11:00
	LAB	ELI	ELI	ELI	ELI
	LAB NUMBER	H07090032-012	H07090032-001	H07090032-006	H07090032-007
	SAMPLE NUMBER	AEH-0709-117	AEH-0709-107	AEH-0709-111	AEH-0709-112
	TYPE	Groundwater	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI	RI
	DESCRIPTION	Split w/EPA			
	REMARKS				Field Duplicate
Common Ions (mg/L): ppm unless noted					
	Bicarbonate (HCO3)	220	170	140	140
	Calcium (Ca) (DIS)	165	103	73	73
	Chloride (Cl)	67	45	21	21
	Magnesium (Mg) (DIS)	32	24	14	15
	Potassium (K) (DIS)	12	6	6	6
	Sodium (Na) (DIS)	166	72	55	54
	Sulfate (SO4)	648	347	269	238
	Total Alkalinity As CACO3	180	140	120	120
Metals (mg/L): ppm unless noted					
	Arsenic (As) (DIS)	0.006	0.003	0.002	0.003
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	0.03	0.02	0.03	<0.02
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	2.37	<0.01	<0.01	<0.01
	Selenium (Se) (DIS)	0.086	0.14	0.09	0.09
	Zinc (Zn) (DIS)	<0.01	0.01	<0.01	<0.01
Other: ppm unless noted					
	Oxidation Reduction Potential	42.2	90.2	109.8	
Physical/Fld-Lab: ppm unless noted					
	Oxygen (O) (DIS) (Fld)	0.04	6.88	5.05	
	pH	6.9	6.9	7	7
	Depth To Water Level (ft)	19.73	23.88	18.58	
	pH (Fld)	6.62	6.64	6.65	
	SC (umhos/cm at 25 C) (Fld)	1785	1037	752	
	SC (umhos/cm at 25 C)	1680	1000	735	741
	Total Suspended Solids	<10	<10	<10	<10
	TDS (Measured at 180 C)	1320	718	502	504
	Water Temperature (C) (Fld)	12.43	11.07	11.1	

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	EH-64	EH-65	MW-3
Water	SAMPLE DATE	9/5/2007	9/6/2007	9/11/2007
	SAMPLE TIME	11:25	14:25	09:25
	LAB	ELI	ELI	ELI
	LAB NUMBER	H07090032-008	H07090052-010	H07090102-001
	SAMPLE NUMBER	AEH-0709-113	AEH-0709-128	AEH-0709-132
	TYPE	Groundwater	Groundwater	Groundwater
	GROUP	RI	RI	RI
	DESCRIPTION		Split w/EPA	
	REMARKS			
Common Ions (mg/L): ppm unless noted				
	Bicarbonate (HCO3)	200	250	320
	Calcium (Ca) (DIS)	153	107	81
	Chloride (Cl)	67	85	9
	Magnesium (Mg) (DIS)	34	27	18
	Potassium (K) (DIS)	8	10	6
	Sodium (Na) (DIS)	120	217	24
	Sulfate (SO4)	552	517	64
	Total Alkalinity As CACO3	170	200	260
Metals (mg/L): ppm unless noted				
	Arsenic (As) (DIS)	0.005	0.01 UJ	0.011
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	0.006	<0.004
	Iron (Fe) (DIS)	0.03	0.04 UJ	0.04
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	4.02	0.03
	Selenium (Se) (DIS)	0.24	0.027	0.006
	Zinc (Zn) (DIS)	<0.01	<0.01	<0.01
Other: ppm unless noted				
	Oxidation Reduction Potential	118.2	96.2	
Physical/Fld-Lab: ppm unless noted				
	Oxygen (O) (DIS) (Fld)	5.19	1.01	0.71
	pH	7	6.9	7.2
	Depth To Water Level (ft)	24.51	21.53	30.29
	pH (Fld)	6.6	6.28	7.02
	SC (umhos/cm at 25 C) (Fld)	1539	1675	607
	SC (umhos/cm at 25 C)	1470	1470	548
	Total Suspended Solids	14	<10	<10
	TDS (Measured at 180 C)	1120	1180	406
	Water Temperature (C) (Fld)	11.89	12.61	9.9

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

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ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	MW-7	DI BLANK	DI BLANK	DI BLANK	DI BLANK
Water	SAMPLE DATE	9/11/2007	9/4/2007	9/5/2007	9/6/2007	9/11/2007
	SAMPLE TIME	10:00	15:25	09:45	14:40	11:30
	LAB	ELI	ELI	ELI	ELI	ELI
	LAB NUMBER	H07090102-002	H07090010-007	H07090032-003	H07090052-011	H07090102-004
	SAMPLE NUMBER	AEH-0709-133	AEH-0709-106	AEH-0709-109	AEH-0709-129	AEH-0709-135
	TYPE	Groundwater	QC	QC	QC	QC
	GROUP	RI	RI	RI	RI	RI
	DESCRIPTION					
	REMARKS		Blank	Blank	Blank	Blank
Common Ions (mg/L): ppm unless noted						
	Bicarbonate (HCO3)	130	2	4	<1	4
	Calcium (Ca) (DIS)	18	<1	<1	<1	<1
	Chloride (Cl)	3	<1	<1	<1	<1
	Magnesium (Mg) (DIS)	5	<1	<1	<1	<1
	Potassium (K) (DIS)	5	<1	<1	<1	<1
	Sodium (Na) (DIS)	21	1	2	<1	2
	Sulfate (SO4)	23	<1	<1	<1	<1
	Total Alkalinity As CACO3	110	2	3	<1	3
Metals (mg/L): ppm unless noted						
	Arsenic (As) (DIS)	0.017	<0.002	<0.002	<0.002	<0.002
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	0.04	<0.02	<0.02	0.03	<0.02
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01	<0.01	<0.01	<0.01
	Selenium (Se) (DIS)	<0.005	<0.005	<0.005	<0.005	<0.005
	Zinc (Zn) (DIS)	<0.01	<0.01	<0.01	<0.01	<0.01
Physical/Fld-Lab: ppm unless noted						
	Oxygen (O) (DIS) (Fld)	9.26				
	pH	7.9	6.1	6.1	5	4.9
	Depth To Water Level (ft)	57.04				
	pH (Fld)	7.39				
	SC (umhos/cm at 25 C) (Fld)	264				
	SC (umhos/cm at 25 C)	212	11	11	8	13
	Total Suspended Solids	135	<10	<10	<10	<10
	TDS (Measured at 180 C)	177	<10	<10	21	<10
	Water Temperature (C) (Fld)	11.7				

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	DI BLANK	DI BLANK	RINSATE	RINSATE	RINSATE
Water	SAMPLE DATE	9/12/2007	9/13/2007	9/4/2007	9/5/2007	9/6/2007
	SAMPLE TIME	15:00	10:00	13:25	13:30	13:30
	LAB	ELI	ELI	ELI	ELI	ELI
	LAB NUMBER	H07090015-012	H07090135-004	H07090010-004	H07090032-010	H07090052-008
	SAMPLE NUMBER	AEH-0709-152	AEH-0709-156	AEH-0709-103	AEH-0709-115	AEH-0709-126
	TYPE	QC	QC	QC	QC	QC
	GROUP	RI	RI	RI	RI	RI
	DESCRIPTION					
	REMARKS	Blank	Blank	Blank	Blank	Blank
Common Ions (mg/L): ppm unless noted						
	Bicarbonate (HCO3)	2	2	4	4	<1
	Calcium (Ca) (DIS)	<1	<1	<1	<1	<1
	Chloride (Cl)	<1	<1	<1	<1	<1
	Magnesium (Mg) (DIS)	<1	<1	<1	<1	<1
	Potassium (K) (DIS)	<1	<1	<1	<1	<1
	Sodium (Na) (DIS)	<1	2	2	2	<1
	Sulfate (SO4)	<1	<1	<1	<1	<1
	Total Alkalinity As CACO3	2	2	3	3	<1
Metals (mg/L): ppm unless noted						
	Arsenic (As) (DIS)	<0.002	<0.002	0.004	<0.002	0.002
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001	<0.001	<0.001
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004	<0.004	<0.004
	Iron (Fe) (DIS)	0.03	<0.02	<0.02	<0.02	<0.02
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005	<0.005	<0.005
	Manganese (Mn) (DIS)	<0.01	<0.01	<0.01	<0.01	<0.01
	Selenium (Se) (DIS)	<0.005	<0.005	<0.005	<0.005	<0.005
	Zinc (Zn) (DIS)	<0.01	<0.01	<0.01	<0.01	<0.01
Physical/Fld-Lab: ppm unless noted						
	pH	4.8	4.8	6.3	5.9	5.2
	SC (umhos/cm at 25 C)	6	16	11	11	7
	Total Suspended Solids	<10	<10	<10	<10	<10
	TDS (Measured at 180 C)	38	<10	<10	<10	22

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	RINSATE	RINSATE	RINSATE	STANDARD	STANDARD
Water	SAMPLE DATE	9/11/2007	9/12/2007	9/13/2007	9/13/2007	9/13/2007
	SAMPLE TIME	15:00	09:10	10:30	14:30	14:30
	LAB	ELI	ELI	ELI	ELI	ELI
	LAB NUMBER	H07090102-007	H07090115-002	H07090135-006	H07090135-012	H07090135-013
	SAMPLE NUMBER	AEH-0709-138	AEH-0709-142	AEH-0709-158	ERA Standard 506	ERA Standard 507
	TYPE	QC	QC	QC	QC	QC
	GROUP	RI	RI	RI	RI	RI
	DESCRIPTION				ERA 506 Minerals	ERA 507 Hardness
	REMARKS	Blank	Blank	Blank	Blind Field Standard	Blind Field Standard
Common Ions (mg/L): ppm unless noted						
	Bicarbonate (HCO3)	4	2	<1	38	
	Calcium (Ca) (DIS)	<1	<1	<1		26
	Chloride (Cl)	<1	<1	<1	122	
	Magnesium (Mg) (DIS)	<1	<1	<1		32
	Potassium (K) (DIS)	<1	<1	<1	36	
	Sodium (Na) (DIS)	<1	<1	2	95	
	Sulfate (SO4)	<1	<1	<1	34	
	Total Alkalinity As CACO3	3	2	<1	33	
Metals (mg/L): ppm unless noted						
	Arsenic (As) (DIS)	<0.002	<0.002	0.002		
	Cadmium (Cd) (DIS)	<0.001	<0.001	<0.001		
	Copper (Cu) (DIS)	<0.004	<0.004	<0.004		
	Iron (Fe) (DIS)	<0.02	<0.02	<0.02		
	Lead (Pb) (DIS)	<0.005	<0.005	<0.005		
	Manganese (Mn) (DIS)	<0.01	<0.01	<0.01		
	Selenium (Se) (DIS)	<0.005	<0.005	<0.005		
	Zinc (Zn) (DIS)	<0.01	<0.01	<0.01		
Physical/Fld-Lab: ppm unless noted						
	pH	5.3	4.9	4.9		
	SC (umhos/cm at 25 C)	7	8	15	599	
	Total Suspended Solids	<10	<10	<10		60
	TDS (Measured at 180 C)	<10	<10	<10	331	

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

ANALYSES SUMMARY REPORT

Asarco East Helena Bi-Monthly Sample Event - September 2007

Database: ASARCO, East Helena Plant

Sample Matrix	STATION	STANDARD
Water	SAMPLE DATE	9/13/2007
	SAMPLE TIME	14:30
	LAB	ELI
	LAB NUMBER	H070901 35-014
	SAMPLE NUMBER	ERA Standard 740
	TYPE	QC
	GROUP	RI
	DESCRIPTION	740 Trace Minerals
	REMARKS	:lind Field Standard

Metals (mg/L): ppm unless noted

Arsenic (As) (TOT)	0.488
Cadmium (Cd) (TOT)	0.393
Copper (Cu) (TOT)	0.58
Iron (Fe) (TOT)	0.37
Lead (Pb) (TOT)	0.724
Manganese (Mn) (TOT)	2.6
Zinc (Zn) (TOT)	0.78

TOT: Total; DIS: Dissolved; TRC: Total Recoverable

NOTE: Table 1 lists data validation flagging descriptions.

APPENDIX 3

FIELD NOTES

STANDARD OPERATING PROCEDURE
INSTRUMENT CALIBRATION FORM
HF-FORM-500

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: ASARCO E HELENA

Project Number: 1054

Date: 7/24/07

Personnel: ARJ AWJ

Weather Conditions:

calm	breeze	windy
no precip	rain	snow
clear	p. cloudy	overcast

Air Temperature:
°F °C

pH

Meter Type: YSI
SN:

Time	Buffer	Temperature	Reading (Temp Corrected)
7.04	4	29.67	3.99
6.58	7	30.81°C	7.00
7.01	10	30.59	10.00
Calibration check:			

Dissolved Oxygen

Meter Type:
SN:
Time: 7.11
Calibration Results:
7.34

Specific Conductance

Meter Type: SN:

Time	Standard	Temperature	Reading (Temp Corrected)	Cell Factor
707	1413	29.29	1413	
Calibration check:				

Turbidity

Meter Type: SN:
Standard: Reading:

Redox Potential (Eh)

Meter Type:
SN:
Electrode: Ag/AgCl
Other:
Time:
ZoBell Solution Potential (mV):
Temperature:

PID/FID

Meter Type: SN:
Span Gas Type:

Time	Span Gas		Calibration Memory	Response Factor	Reading
	Gauge Pressure	Concentration			
Calibration Check:					

Notes/Additional Information:

STANDARD OPERATING PROCEDURE
INSTRUMENT CALIBRATION FORM
HF-FORM-500

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: ASARCO Ellelena

Project Number: 1054

Date: 7/27/07

Personnel: AFJ AWS

Weather Conditions:

calm	breeze	windy
no precip	rain	snow
clear	p. cloudy	overcast

Air Temperature:
°F °C

pH

Meter Type: YSI
SN:

Time	Buffer	Temperature	Reading (Temp Corrected)
6:46	4	27.77	4.0
6:42	7	28.28	7.0
6:49	10	27.60	9.99
Calibration check:			

Dissolved Oxygen

Meter Type:
SN:
Time: 7:00
Calibration Results:
7.65

Specific Conductance

Meter Type: SN:

Time	Standard	Temperature	Reading (Temp Corrected)	Cell Factor
653	1413	27.27	1413	
Calibration check:				

Turbidity

Meter Type: SN:
Standard: Reading:

Redox Potential (Eh)

Meter Type:
SN:
Electrode: Ag/AgCl
Other:
Time:
ZoBell Solution Potential (mV):
Temperature:

PID/FID

Meter Type: SN:
Span Gas Type:

Time	Span Gas		Calibration Memory	Response Factor	Reading
	Gauge Pressure	Concentration			
Calibration Check:					

Notes/Additional Information:

STANDARD OPERATING PROCEDURE
INSTRUMENT CALIBRATION FORM
HF-FORM-500

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena

Project Number: 1054

Date: 7/30/07

Personnel: ARS

Weather Conditions:

calm	breeze	windy
no precip	rain	snow
clear	p. cloudy	overcast

Air Temperature:
°F °C

pH

Meter Type: YSI
SN:

Time	Buffer	Temperature	Reading (Temp Corrected)
7:37	4	27.98	4.00
7:33	7	28.09	7.00
7:45	10	27.81	9.98
Calibration check:			

Dissolved Oxygen

Meter Type:
SN:
Time: 8:26
Calibration Results:
7.00

Specific Conductance

Meter Type: SN:

Time	Standard	Temperature	Reading (Temp Corrected)	Cell Factor
7:52	1413	27.48	1413	
Calibration check:				

Turbidity

Meter Type: SN:
Standard: Reading:

Redox Potential (Eh)

Meter Type:
SN:
Electrode: Ag/AgCl
Other:
Time:
ZoBell Solution Potential (mV):
Temperature:

PID/FID

Meter Type: SN:
Span Gas Type:

Time	Span Gas		Calibration Memory	Response Factor	Reading
	Gauge Pressure	Concentration			
Calibration Check:					

Notes/Additional Information:

STANDARD OPERATING PROCEDURE
INSTRUMENT CALIBRATION FORM
HF-FORM-500

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco Ethelena

Project Number: 1054

Date: 7/23/07

Personnel: ARS

Weather Conditions:

calm	breeze	windy
no precip	rain	snow
clear	p. cloudy	overcast

Air Temperature:
°F °C

pH

Meter Type: YSI
SN:

Time	Buffer	Temperature	Reading (Temp Corrected)
6:46	4	28.74	4.0
6:42	7	29.38	6.99
6:51	10	28.59	9.98
Calibration check:			

Dissolved Oxygen

Meter Type:
SN:
Time: 7:00
Calibration Results:
7.27

Specific Conductance

Meter Type: SN:

Time	Standard	Temperature	Reading (Temp Corrected)	Cell Factor
654	1413	28.84	1413	
Calibration check:				

Turbidity

Meter Type: SN:
Standard: Reading:

Redox Potential (Eh)

Meter Type:
SN:
Electrode: Ag/AgCl
Other:
Time:
ZoBell Solution Potential (mV):
Temperature:

PID/FID

Meter Type: SN:
Span Gas Type:

Time	Span Gas		Calibration Memory	Response Factor	Reading
	Gauge Pressure	Concentration			
Calibration Check:					

Notes/Additional Information:

STANDARD OPERATING PROCEDURE
INSTRUMENT CALIBRATION FORM
HF-FORM-500

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: ASARCO E Helena

Project Number: 1054

Date: 7/26/07

Personnel: ARJ

Weather Conditions:

calm	breeze	windy
no precip	rain	snow
clear	p. cloudy	overcast

Air Temperature:
°F °C

pH

Meter Type:
SN:

Time	Buffer	Temperature	Reading (Temp Corrected)
6:49	4	28.94	4.0
6:47	7	28.91	7.0
6:52	10	28.87	9.98
Calibration check:			

Dissolved Oxygen

Meter Type:
SN:
Time: 7:02
Calibration Results: 7.29

Specific Conductance

Meter Type: SN:

Time	Standard	Temperature	Reading (Temp Corrected)	Cell Factor
6:56	1413	28.52	1413	
Calibration check:				

Turbidity

Meter Type: SN:
Standard: Reading:

Redox Potential (Eh)

Meter Type:
SN:
Electrode: Ag/AgCl
Other:
Time:
ZoBell Solution Potential (mV):
Temperature:

PID/FID

Meter Type: SN:
Span Gas Type:

Time	Span Gas		Calibration Memory	Response Factor	Reading
	Gauge Pressure	Concentration			
Calibration Check:					

Notes/Additional Information:

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: DH-11
Sample Code Number: AEH-0708-100
Sample Date: ~~8/4/07~~ 9/4/07
Sample Time: 1125 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring– other:
Weather Conditions: (calm) breeze windy (no precip) rain snow clear (p. cloudy) overcast
Air Temperature: °C 70 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

		Comments
TD (ft):	41'	
SWL (ft):	14.62	no access/pumping
Casing Diameter (I.D.")	4"	
Water Volume (V) (gal):	16.88	10:31
x 3=(gal.)	50.65	1 gpm
Actual Vol. Removed (gal.)	53	
Water Level Recovery:	slow (moderate) rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
10:37	88.3	1.10	6.49	707	/	10.62	
10:43	55.3	0.19	6.72	656	/	10.61	
10:54	38.0	0.14	6.80	624	/	10.61	
1113	21.9	0.18	6.84	609	/	10.69	
1115	20.7	0.20	6.85	609	/	10.68	
1117	20.7	0.17	6.85	608	/	10.68	
1119	19.7	0.18	6.85	607	/	10.67	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12-Volt

Field Parameters

	Sample	Duplicate
ORP (mV)	19.2	/
DO (mg/l)	0.16	/
pH	6.85	/
SC (µmhos/cm)	607	/
Turbidity (ntu)	/	/
H_2O Tmp. (°C)	10.64	/
Color	Clear	/
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500 ml~~	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Cannons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E. Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: DH-7
Sample Code Number: AEH-0708-101
Sample Date: ~~8/4/07~~ 9/4/07
Sample Time: 12:10 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: AEH-0708-102
Duplicate Sample Time: 12:15

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring– other:
Weather Conditions: calm (breeze) windy (no precip.) rain snow clear (p. cloudy) overcast
Air Temperature: °C 70 F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD (ft): 30'
SWL (ft): 20.83 no access/pumping
Casing Diameter (I.D.") 4"
Water Volume (V) (gal): 5.87
x 3=(gal.) 17.61 1gpm
Actual Vol. Removed (gal.) 21
Water Level Recovery: slow (moderate) (rapid)

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1149	110.7	9.73	6.75	294	/	12.77	
1154	106.4	2.97	6.67	341	/	11.13	
1158	101.7	2.46	6.66	343	/	10.92	
1200	99.6	2.32	6.66	344	/	10.85	
1202	97.3	2.09	6.66	346	/	10.70	
1204	95.5	1.90	6.67	347	/	10.65	
1206	93.4	1.75	6.67	348	/	10.64	

Turbidity: (clear) moderate (circle) slight very

Sample Method: (grab) composite (describe) (pump) bailer other 12-Volt

Field Parameters

	Sample	Duplicate
ORP (mV)	91.4	
DO (mg/l)	1.60	
pH	6.67	
SC (µmhos/cm)	349	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	10.65	
Color	Clear	
Other:		

'209

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Meb	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

h:\files\105\9801\admin\hsop\sec6.0\hf-430.xls\HLN\07/17/97\034 8/27/2007/4:41 PM

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E. Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: AEH-0708-103
Sample Code Number: Rinsate Blank
Sample Date: 8/14/07 9/14/07
Sample Time: 1325 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD (ft):
SWL (ft): no access/pumping
Casing Diameter (I.D.")
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.)
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes No Photo taken: Yes No
Site Type: DRY surface water process water
monitoring well domestic well adit seep
spring- other:
Weather Conditions: calm breeze windy
no precip rain snow
clear p. cloudy overcast
Air Temperature: °C 70 F

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) grab composite pump bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	~~500~~ 250 ml	F or UF	HNO3	Diss Metals	
1	1000 ml	F or UF	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: RINSATE Blank

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy C

Site Designation: AEH-0708-104
Sample Code Number: EH-58
Sample Date: ~~8/14/07~~ 9/4/07
Sample Time: 1350 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring- other:
Weather Conditions: calm (breeze) windy (no precip.) rain snow clear (p. cloudy) overcast
Air Temperature: °C 70 F

For Groundwater Samples

		Comments
well volume formula:	V = (TD-SWL)x(Dia.²) / 25	
TD (ft):	24'	
SWL (ft):	15.51	no access/pumping
Casing Diameter (I.D.")	4"	
Water Volume (V) (gal):	5.43	1gpm
x 3=(gal.)	16.30	
Actual Vol. Removed (gal.)	17	1334
Water Level Recovery:	slow moderate rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1336	130.8	6.70	6.40	351	/	11.53	
1340	125.0	6.81	6.49	355	/	11.19	
1342	123.1	6.90	6.52	353	/	11.13	
1344	120.5	6.94	6.55	352	/	11.08	
1346	118.8	6.97	6.56	351	/	11.06	
1348	117.7	6.97	6.57	350	/	11.07	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite pump bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)	116.3	
DO (mg/l)	6.95	
pH	6.58	
SC (µmhos/cm)	350	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	11.06	
Color		
Other:		

Bottles Collected

Quantity	Size ~~500~~ 250	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: EH-102
Sample Code Number: AEH-0708-105
Sample Date: ~~8/4/07~~ 9/4/07
Sample Time: 1520 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring– other:
Weather Conditions: calm (breeze) windy
(no precip) rain snow
clear (p. cloudy) overcast
Air Temperature: °C 70 °F

For Groundwater Samples

well volume formula: $V = \frac{(TD-SWL)x(Dia.^2)}{25}$ Comments

TD (ft): 35'
SWL (ft): 9.11 no access/pumping
Casing Diameter (I.D.") 4"
Water Volume (V) (gal): 16.57 .75/gal
x 3=(gal.) 49.71
Actual Vol. Removed (gal.) 52 1411
Water Level Recovery: (slow) moderate rapid 66

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1510	124.0	3.00	6.67	719	/	10.01	
1512	121.3	3.02	6.68	719	/	10.01	
1514	120.8	2.98	6.67	719	/	9.97	
1516	120.3	2.96	6.67	721	/	9.96	
1518	120.0	2.96	6.67	720	/	9.96	

Turbidity: (circle) (clear) moderate slight very

Sample Method: (describe) (grab) composite pump bailer other 12-Volt

Field Parameters

1520

	Sample	Duplicate
ORP (mV)	119.6	
DO (mg/l)	2.95	
pH	6.66	
SC (µmhos/cm)	721	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	10.05	
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco East Helena
Project Code: 1054
Sample Team Member(s): JLC AJ
Laboratory Used: Energy

Site Designation: DI Blank
Sample Code Number: AEH-0709-106
Sample Date: 9/4/07
Sample Time: 1525 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring- other:
Weather Conditions: calm breeze windy
no precip. rain snow
clear p. cloudy overcast
Air Temperature: °C °F

For Groundwater Samples

well volume formula: $V = (TD-SWL)x(Dia.^2)$ / 25

TD (ft):
SWL (ft): no access/pumping
Casing Diameter (I.D.")
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.)
Water Level Recovery: slow moderate rapid

Comments

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) (grab) composite (pump) bailer other
12 Volt

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
(1)	250 ml	(F) or UF	HNO3	Diss Metals	
(1)	1000 ml	F or (UF)	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: DI Blank

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: EH-67
Sample Code Number: AEH-0709-107
Sample Date: 9/5/07
Sample Time: 0840 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD (ft): 46.5
SWL (ft): 23.88 — no access/pumping
Casing Diameter (I.D.") 4"
Water Volume (V) (gal): 14.48
x 3=(gal.) 43.43
Actual Vol. Removed (gal.) .52
Water Level Recovery: slow moderate rapid

1gpm
7/6

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring- other:
Weather Conditions: (calm) breeze windy no precip. (rain) snow clear p. cloudy (overcast)
Air Temperature: °C 60 F

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
0830	90.8	6.88	6.64	1038	/	11.06	
0832	90.6	6.90	6.64	1035	/	11.08	
0834	90.5	6.88	6.64	1035	/	11.08	
0836	90.2	6.88	6.64	1037	/	11.07	
0838	90.2	6.88	6.64	1037	/	11.07	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite 12-Volt (pump) bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)	90.2	/
DO (mg/l)	6.88	/
pH	6.64	/
SC (µmhos/cm)	1037	/
Turbidity (ntu)	/	/
H_2O Tmp. (°C)	11.07	/
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: EH-57A
Sample Code Number: AEH-0709-108
Sample Date: 9/5/07
Sample Time: 0940 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: /
Duplicate Sample Time: /

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring– other:
Weather Conditions: calm (breeze) windy (no precip.) rain snow clear p. cloudy (overcast)
Air Temperature: °C 55 F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD (ft): 45'
SWL (ft): 28.78 no access/pumping
Casing Diameter (I.D.") 4"
Water Volume (V) (gal): 10.38 .75 gal
x 3=(gal.) 31.14 8:58
Actual Vol. Removed (gal.) 32
Water Level Recovery: (slow) moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
0927	82.2	9.42	6.92	465	/	11.32	
0929	81.7	9.41	6.92	468	/	11.34	
0931	81.4	9.38	6.92	470	/	11.33	
0933	81.4	9.35	6.92	475	/	11.31	
0935	81.1	9.33	6.92	466	/	11.33	
0938	80.7	9.33	6.92	472	/	11.31	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) grab composite (pump) bailer other 12-Volt

Field Parameters

	Sample	Duplicate
ORP (mV)	80.7	
DO (mg/l)	9.33	
pH	6.92	
SC (µmhos/cm)	472	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	11.31	
Color	Clear	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

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Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC IAJ
Laboratory Used: Energy

Site Designation: DI Blank
Sample Code Number: AEH-0707-109
Sample Date: 7/5/07
Sample Time: 0945 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes No Photo taken: Yes No
Site Type: DRY surface water process water
monitoring well domestic well adit seep
spring- other:
Weather Conditions: calm breeze windy
no precip. rain snow
clear p. cloudy overcast
Air Temperature: °C °F

For Groundwater Samples

well volume formula: $V = \frac{(TD-SWL)x(Dia.^2)}{25}$ Comments

TD (ft):
SWL (ft): no access/pumping
Casing Diameter (I.D.")
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.)
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) grab composite pump bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

DI Blank

Sample Team Member Signature: Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1050
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy Cl

Site Designation: EH-53
Sample Code Number: AEH-0709-110
Sample Date: 9/5/07
Sample Time: 1025 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: ~~AEH-0709-110-S~~
Duplicate Sample Time: ~~1030~~ Split

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring– other:
Weather Conditions: calm (breeze) windy
(no precip) rain snow
clear p. cloudy (overcast)
Air Temperature: °C 60 °F

For Groundwater Samples

		Comments
well volume formula:	V = (TD-SWL)x(Dia.^{2}) / 25	
TD (ft):	35'	
SWL (ft):	22.64	no access/pumping
Casing Diameter (I.D.")	4"	
Water Volume (V) (gal):	7.91	257
x 3=(gal.)	23.73	1gpm
Actual Vol. Removed (gal.)	28	
Water Level Recovery:	slow moderate rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
10:10	102.2	6.90	6.55	1537	/	11.32	
10:12	101.6	6.91	6.55	1533	/	11.32	
10:14	100.8	6.93	6.56	1525	/	11.34	
10:16	100.3	6.97	6.57	1523	/	11.33	
10:18	99.6	6.93	6.57	1520	/	11.34	
10:24	98.1	6.84	6.58	1516		11.35	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12-Volt

Field Parameters

	Sample	Duplicate
ORP (mV)	98.1	
DO (mg/l)	6.84	
pH	6.58	
SC (µmhos/cm)	1516	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	11.35	
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:
Split collected on Diss Metals -110-S for EPA

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: EH-63
Sample Code Number: AEH-0709-111
Sample Date: 9/5/07
Sample Time: 1055 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: AEH-0709-112
Duplicate Sample Time: 11:00

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring– other:
Weather Conditions: calm (breeze) windy (no precip.) rain snow clear p. cloudy (overcast)
Air Temperature: °C 60 F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

		Comments
TD (ft):	27'	
SWL (ft):	18.58'	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	1.35	1086
x 3=(gal.)	4.04	1gpm
Actual Vol. Removed (gal.)	12	
Water Level Recovery:	slow moderate rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1050	117.1	5.10	6.67	739	/	11.21	
1052	114.5	5.09	6.666	750	/	11.12	
1054	113.0	5.08	6.666	751	/	11.11	
1056	110.8	5.07	6.65	751	/	11.10	

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) (grab) composite (pump) bailer other 12-volt

Field Parameters

1058

	Sample	Duplicate
ORP (mV)	109.8	
DO (mg/l)	5.05	
pH	6.65	
SC (µmhos/cm)	752	
Turbidity (ntu)		
H_2O Tmp. (°C)	11.10	
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	D Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy C4

Site Designation: EH-64
Sample Code Number: AEH-0709-113
Sample Date: 9/5/07
Sample Time: 1125 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring- other:
Weather Conditions: (calm) breeze windy (no precip) rain snow clear p. cloudy (overcast)
Air Temperature: °C 60 F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) / 25

		Comments
TD (ft):	35'	
SWL (ft):	24.51	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	1.68	
x 3=(gal.)	5.04	1 gpm
Actual Vol. Removed (gal.)	8	1117
Water Level Recovery:	slow moderate rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1117	119.7	6.30	6.51	1022	/	14.76	
1119	126.0	5.69	6.51	1441	/	12.54	
1121	122.4	5.31	6.58	1512	/	12.13	
1123	119.5	5.20	6.60	1534	/	11.93	
1125	118.2	5.19	6.60	1539	/	11.89	

Turbidity: (circle) clear moderate slight (very)

Sample Method: (describe) (grab) composite (pump) bailer other
12-Volt

Field Parameters

	Sample	Duplicate
ORP (mV)	118.2	
DO (mg/l)	5.19	
pH	6.60	
SC (µmhos/cm)	1539	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	11.89	
Color	Clear	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: EH-115
Sample Code Number: AEH-0709-114
Sample Date: 9/5/07
Sample Time: 1320 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

		Comments
well volume formula:	V = (TD-SWL)x(Dia.^{2}) / 25	
TD (ft):	53'	
SWL (ft):	25.86'	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	4.34	0.75
x 3=(gal.)	13.03	1259
Actual Vol. Removed (gal.)	20	
Water Level Recovery:	slow moderate rapid	

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring– other:
Weather Conditions: calm (breeze) windy (no precip) rain snow clear p. cloudy (overcast)
Air Temperature: °C 65 °F

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1304	56.1	6.20	6.95	628	/	11.48	
1306	55.7	6.17	6.96	620	/	11.42	
1308	55.4	6.17	6.97	611	/	11.40	
1310	54.9	6.11	6.97	602	/	11.49	
1312	54.5	6.11	6.98	597	/	11.47	

Turbidity: (circle) clear (slight) moderate very

Sample Method: (describe) (grab) composite 12-volt (pump) bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)	53.7	
DO (mg/l)	6.08	
pH	6.99	
SC (µmhos/cm)	593	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	11.41	
Color	Clear	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco East Helena
Project Code: 1054
Sample Team Member(s): JLC/AJ
Laboratory Used: Energy

Site Designation: Rinsate Blank
Sample Code Number: AEH-0709-115
Sample Date: 9/5/07
Sample Time: 1330 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD (ft):
SWL (ft): no access/pumping
Casing Diameter (I.D.")
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.)
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
monitoring well domestic well adit seep
spring- other:
Weather Conditions: calm breeze windy
no precip. rain snow
clear p. cloudy overcast
Air Temperature: °C °F

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) (grab) composite (pump) bailer other
12 Volt

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
(1)	250 ml	(F) or UF	HNO3	Diss Metals	
(1)	1000 ml	F or (UF)	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: Rinsate Blank

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: EH-104
Sample Code Number: AEH-0709-116
Sample Date: 9/5/07
Sample Time: 1410 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water monitoring well domestic well adit seep spring– other:
Weather Conditions: (calm) breeze windy no precip. rain snow clear (p. cloudy) overcast
Air Temperature: °C 70 °F

For Groundwater Samples

		Comments
well volume formula:	V = (TD-SWL)x(Dia.^{2}) / 25	
TD (ft):	59'	
SWL (ft):	25.0'	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	5.44	1344
x 3=(gal.)	16.32	0.75 gpm
Actual Vol. Removed (gal.)	17.25	19.5
Water Level Recovery:	slow moderate rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1355	51.4	6.68	7.14	753	/	11.04	
1357	51.7	6.75	7.16	754	/	10.98	
1359	52.0	6.69	7.17	753	/	11.03	
1401	52.1	6.69	7.18	753	/	11.05	
1403	52.4	6.69	7.19	753	/	11.03	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other
12-volt

Field Parameters

	Sample	Duplicate
ORP (mV)	52.6	
DO (mg/l)	6.70	
pH	7.20	
SC (µmhos/cm)	753	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	11.01	
Color	Clear	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco Elkland
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: EH-61
Sample Code Number: AEH-0709-117
Sample Date: 9/5/07
Sample Time: 1520 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring– other:
Weather Conditions: calm (breeze) windy (no precip.) rain snow (clear) p. cloudy overcast
Air Temperature: °C 75°F

For Groundwater Samples

		Comments
well volume formula:	V = (TD-SWL)x(Dia.^{2}) / 25	
TD (ft):	45'	
SWL (ft):	19.73	no access/pumping
Casing Diameter (I.D.")	4"	
Water Volume (V) (gal):	16.17	1425 19gpm
x 3=(gal.)	48.52	
Actual Vol. Removed (gal.)	55	
Water Level Recovery:	slow moderate rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1508	44.5	0.04	6.63	1785	/	12.48	
1510	44.0	0.05	6.62	1785	/	12.44	
1512	43.6	0.04	6.62	1784	/	12.48	
1514	43.1	0.05	6.63	1784	/	12.45	
1516	42.5	0.05	6.63	1786	/	12.44	
1518							

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) grab composite pump bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)	42.2	
DO (mg/l)	0.04	
pH	6.62	
SC (µmhos/cm)	1785	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	12.43	
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: Split Collected on Dissolved Metals – 117-S for EPA

Sample Team Member Signature: [signature] Page of

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Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): DC / AJ
Laboratory Used: Energy

Site Designation: EH-103
Sample Code Number: AEH-0709-118
Sample Date: 9/5/07
Sample Time: 1610 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

		Comments
TD (ft):	77'	
SWL (ft):	20.35'	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	~~36.256~~ 9.06	
x 3=(gal.)	~~108.77~~ 27.19	0.9 gpm
Actual Vol. Removed (gal.)	~~27.19~~ 30	
Water Level Recovery:	slow moderate rapid	

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring– other:
Weather Conditions: (calm) breeze windy (no precip) rain snow (clear) p. cloudy overcast
Air Temperature: °C 75 °F

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1558	39.4	0.06	6.62	1642	/	12.79	
1600	38.3	0.06	6.63	1649	/	12.77	
1602	37.8	0.04	6.63	1650	/	12.80	
1604	37.5	0.05	6.62	1653	/	12.80	
1606	36.8	0.04	6.63	1658	/	12.83	

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) (grab) composite (pump) bailer other 12-volt

Field Parameters

	Sample	Duplicate
1610 ORP (mV)	36.4	
DO (mg/l)	0.04	
pH	6.63	
SC (µmhos/cm)	1663	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	12.75	
Color	Clear	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy Cl

Site Designation: EH-107
Sample Code Number: HEH-0709-119
Sample Date: 9/6/07
Sample Time: 0820 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

		Comments
well volume formula:	V = (TD-SWL)x(Dia.^{2}) / 25	
TD (ft):	82'	
SWL (ft):	18.37	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	10.18	
x 3=(gal.)	30.54	0.9 gpm
Actual Vol. Removed (gal.)	31.5	0745
Water Level Recovery:	slow moderate rapid	

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring- other:
Weather Conditions: calm (breeze) windy (no precip) rain snow clear (p. cloudy) overcast
Air Temperature: °C 60 °F

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
0810	75.8	0.23	6.40	1968	/	11.99°	
0812	74.8	0.20	6.41	1969	/	11.99	
0814	74.3	0.21	6.41	1969	/	12.00	
0816	73.5	0.16	6.41	1969	/	12.00	
0818	72.8	0.22	6.41	1969	/	12.01	

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) (grab) composite (pump) bailer other 12-volt

Field Parameters

	Sample	Duplicate
ORP (mV)	71.8	
DO (mg/l)	0.18	
pH	6.42	
SC (µmhos/cm)	1970	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	12.02	
Color	Clear	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy Cl

Site Designation: EH-101
Sample Code Number: AEH-0709-120
Sample Date: 9/6/07
Sample Time: 0935 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: AEH-0709-121
Duplicate Sample Time: 0945

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring– other:
Weather Conditions: (calm) breeze windy (no precip.) rain snow clear (p. cloudy) overcast
Air Temperature: °C 65 F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD (ft): 46'
SWL (ft): 13.45 no access/pumping
Casing Diameter (I.D.") 4"
Water Volume (V) (gal): 20.83
x 3=(gal.) 62.50
Actual Vol. Removed (gal.) 66
Water Level Recovery: slow moderate (rapid)

1.2 gpm
8:40

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
~~0918~~ 0922	104.6	3.76	6.62	1539	/	11.07	
0924	103.7	3.81	6.61	1542	/	10.94	
0926	103.0	3.80	6.61	1541	/	10.93	
0928	102.5	3.80	6.63	1540	/	10.92	
0930	101.3	3.76	6.61	1538	/	11.07	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other
12-Volt

Field Parameters

	Sample	Duplicate
ORP (mV)	99.2	
DO (mg/l)	3.72	
pH	6.61	
SC (µmhos/cm)	1537	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	11.07	
Color		
Other:		

935

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	~~500 ml~~ 250	(F) or UF	HNO3	Diss/Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: Split taken for EPA, bottle -1205 -121-S Diss Metals Only

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC/AJ
Laboratory Used: Energy CY

Site Designation: EH-110
Sample Code Number: AEH-0709-122
Sample Date: 9/6/07
Sample Time: 1020 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

		Comments
TD (ft):	59'	
SWL (ft):	15.8	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	6.91	1.1
x 3=(gal.)	20.736	0958
Actual Vol. Removed (gal.)	24	
Water Level Recovery:	slow moderate rapid	

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring- other:
Weather Conditions: calm (breeze) windy (no precip.) rain snow clear (p. cloudy) overcast
Air Temperature: °C 70 °F

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1008	150.1	0.17	6.58	2308	/	12.27	
1010	147.7	0.16	6.58	2309	/	12.27	
1012	145.2	0.15	6.59	2310	/	12.28	
1014	142.7	0.11	6.60	2311	/	12.28	
1016	140.3	0.09	6.60	2312	/	12.28	

Turbidity: (circle) clear slight (moderate) very

Sample Method: (describe) (grab) composite (pump) bailer other 12-volt

Field Parameters

	Sample	Duplicate
ORP (mV)	135.3	
DO (mg/l)	0.07	
pH	6.61	
SC (µmhos/cm)	2312	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	12.29	
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	~~500~~ 250 ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

-820

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Haland
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy C

Site Designation: EH-114
Sample Code Number: AEH-0707-123-S
Sample Date: 9/6/07
Sample Time: 1100 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring– other:
Weather Conditions: calm (breeze) windy (no precip.) rain snow (clear) p. cloudy overcast
Air Temperature: °C 70 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) / 25

		Comments
TD (ft):	57'	
SWL (ft):	24.97	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	5.12	1 gpm
x 3=(gal.)	15.37	
Actual Vol. Removed (gal.)	20	1040
Water Level Recovery:	slow (moderate) rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1050	134.8	8.16	6.54	1106	\	11.30	
1052	133.0	8.16	6.55	1104	\	11.27	
1054	131.2	8.15	6.56	1102	\	11.28	
1056	129.6	8.15	6.56	1099	\	11.28	
1058	128.3	8.17	6.57	1098	\	11.32	

Turbidity: (circle) clear (slight) moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12-volt

Field Parameters

	Sample	Duplicate
ORP (mV)	127.2	
DO (mg/l)	8.13	
pH	6.57	
SC (µmhos/cm)	1097	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	11.33	
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: Split on Dissolved Metals for EPA -123-S

Sample Team Member Signature: [signature] Page of

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Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E. Helena
Project Code: 1054
Sample Team Member(s): JLC/AJ
Laboratory Used: Energy

Site Designation: EH-116
Sample Code Number: AEH-0709-124
Sample Date: 9/6/07
Sample Time: ~~FE~~ 1130 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring– other:
Weather Conditions: calm (breeze) windy
(no precip.) rain snow
(clear) p. cloudy overcast
Air Temperature: °C 70 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

		Comments
TD (ft):	50'	
SWL (ft):	23.81	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	4.19	1116
x 3=(gal.)	12.57	1gpm
Actual Vol. Removed (gal.)	14	
Water Level Recovery:	slow moderate rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1120	125.7	0.96	6.17	1547	/	11.52	
1122	125.0	0.45	6.19	1529	/	11.41	
1124	123.7	0.26	6.20	1516	/	11.31	
1126	123.1	0.21	6.20	1503	/	11.35	
1128	122.7	0.19	6.21	1496	/	11.34	

Turbidity: (circle) clear moderate slight (very)

Sample Method: (describe) (grab) composite (pump) bailer other
12-volt

Field Parameters

	Sample	Duplicate
ORP (mV)	122.4	
DO (mg/l)	0.15	
pH	6.89	
SC (µmhos/cm)	1621	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	11.40	
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3		
1	1000 ml	F or (UF)	Raw		
1	500 ml	F or UF	HCL		
	1000 ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

29

Comments: Split Collected on Diss Metals for EPA - 124.5

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco Ethalana
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: EH-117
Sample Code Number: AEH-0709-125
Sample Date: 9/6/07
Sample Time: 1155 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring– other:
Weather Conditions: calm (breeze) windy (no precip.) rain snow (clear) p. cloudy overcast
Air Temperature: °C 70 F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

		Comments
TD (ft):	43'	
SWL (ft):	22.78'	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	3.3152	1145
x 3=(gal.)	9.95	1 gpm
Actual Vol. Removed (gal.)	~~15~~ 14	
Water Level Recovery:	slow moderate rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1146	120.1	8.38	5.99	1563	/	13.25	
1148	115.0	3.43	6.21	1703	/	11.61	
1150	112.8	2.21	6.27	1740	/	11.38	
1152	112.0	1.88	6.29	1746	/	11.31	
1154	111.2	1.70	6.31	1740	/	11.27	

Turbidity: (circle) clear moderate (slight) very

Sample Method: (describe) (grab) composite (pump) bailer other 12-Volt

Field Parameters

	Sample	Duplicate
ORP (mV)	110.9	
DO (mg/l)	1.70	
pH	6.31	
SC (µmhos/cm)	1730	
Turbidity (ntu)		
H_2O Tmp. (°C)	11.27	
Color		
Other:		

1155

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: Split on Diss Metals Collected for EPA -125-S

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): TLC / AJ
Laboratory Used: Energy

Site Designation: Rinsate Blank
Sample Code Number: AEH-0709-1216
Sample Date: 9/6/07
Sample Time: 1330 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia²) / 25

Comments

TD (ft):
SWL (ft): no access/pumping
Casing Diameter (I.D.")
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.)
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes No Photo taken: Yes No
Site Type: DRY surface water process water
monitoring well domestic well adit seep
spring– other:
Weather Conditions: calm breeze windy
no precip. rain snow
clear p. cloudy overcast
Air Temperature: °C °F

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) grab composite pump bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	~~250~~ 500 ml	F or UF	HNO3	Diss Metals	
1	1000 ml	F or UF	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: Rinsate Blank

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy C

Site Designation: EH-113
Sample Code Number: AEH-0709-127-5
Sample Date: 9/6/07
Sample Time: 1355 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring– other:
Weather Conditions: calm breeze (windy)
(no precip.) rain snow
(clear) p. cloudy overcast
Air Temperature: °C 75 F

For Groundwater Samples

		Comments
well volume formula:	V = (TD-SWL)x(Dia.²) / 25	
TD (ft):	46'	
SWL (ft):	21.41	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	3.93	1340
x 3=(gal.)	11.80	1 gpm
Actual Vol. Removed (gal.)	15	
Water Level Recovery:	slow moderate rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1342	113.9	8.15	6.24	1383	/	12.15	
1344	108.1	8.02	6.38	1432	/	11.86	
1346	104.9	7.87	6.46	1452	/	11.75	
1348	104.2	7.79	6.48	1455	/	11.79	
1350	102.6	7.72	6.50	1457	/	11.83	
1352	102.0	7.67	6.50	1459	/	11.80	

Turbidity: (circle) clear moderate (slight) very

Sample Method: (grab) composite (pump) bailer other
(describe) 12 volt

Field Parameters

1354

	Sample	Duplicate
ORP (mV)	101.1	
DO (mg/l)	7.63	
pH	6.51	
SC (µmhos/cm)	1459	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	11.82	
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	~~500~~ 250 ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: Split collected for EPA (Dissolved Metals) - 127-5

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: EH-65
Sample Code Number: AEH-0709-128
Sample Date: 9/6/07
Sample Time: 1425 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

		Comments
well volume formula:	V = (TD-SWL)x(Dia.^{2}) / 25	
TD (ft):	35'	
SWL (ft):	21.53'	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	2.16	1413
x 3=(gal.)	6.47	
Actual Vol. Removed (gal.)	12	
Water Level Recovery:	slow moderate rapid	

Site Conditions

New Site: Yes No Photo taken: Yes No
Site Type: DRY surface water process water monitoring well domestic well adit seep spring- other:
Weather Conditions: calm breeze windy no precip. rain snow clear p. cloudy overcast
Air Temperature: °C 75 °F

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1414	110.4	7.37	5.91	1263	/	16.32	
1416	98.5	2.18	6.21	1601	/	13.09	
1418	97.5	1.62	6.24	1642	/	12.93	
1420	96.9	1.27	6.26	1667	/	12.73	
1422	96.6	1.07	6.27	1672	/	12.58	
1425	96.2	1.01	6.28	1675	/	12.61	

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) grab composite pump bailer other
12-volt

Field Parameters

	Sample	Duplicate
ORP (mV)	96.2	
DO (mg/l)	1.01	
pH	6.28	
SC (µmhos/cm)	1675	
Turbidity (ntu)		
H_2O Tmp. (°C)	12.61	
Color	Clear	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	~~500 ml~~ 750	F or UF	HNO3	Diss Metals	
1	1000 ml	F or UF	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: Split Collected for EPA - Diss Metals only - 128-5

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco East Helena
Project Code: 1054
Sample Team Member(s): AJ/JLC
Laboratory Used: Energy

Site Designation: DI Blank
Sample Code Number: AEH-0709-129
Sample Date: 1440
Sample Time: 9/6/07 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring- other:
Weather Conditions: calm breeze windy
no precip. rain snow
clear p. cloudy overcast
Air Temperature: °C °F

For Groundwater Samples

well volume formula: $V = \frac{(TD-SWL)x(Dia.^2)}{25}$ Comments
TD (ft):
SWL (ft): no access/pumping
Casing Diameter (I.D.")
Water Volume (V) (gal):
x 3=(gal.)
Actual Vol. Removed (gal.)
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) (grab) composite (pump) bailer other
12 Volt

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: DI Blank

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco E Helena
Project Code: 1054
Sample Team Member(s): JLC / AJ
Laboratory Used: Energy

Site Designation: EH-112
Sample Code Number: AEH-0709-130
Sample Date: 9/6/07
Sample Time: 1505 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

		Comments
well volume formula:	V = (TD-SWL)x(Dia.^{2}) / 25	
TD (ft):	52'	
SWL (ft):	21.47	no access/pumping
Casing Diameter (I.D.")	2"	
Water Volume (V) (gal):	4.88	1.47
x 3=(gal.)	14.65	.9
Actual Vol. Removed (gal.)	16	
Water Level Recovery:	slow (moderate) rapid	

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring- other:
Weather Conditions: calm breeze (windy) (no precip.) rain snow (clear) p. cloudy overcast
Air Temperature: °C 75 °F

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1448	100.7	5.21	6.07	1484	\	13.14	
1451	100.3	3.99	6.14	1540	\	12.46	
1453	100.4	3.96	6.15	1557	\	12.34	
1455	100.3	4.01	6.16	1561	\	12.22	
1457	100.1	4.01	6.16	1562		12.19	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12-volt

Field Parameters

	Sample	Duplicate
ORP (mV)	99.3	
DO (mg/l)	4.13	
pH	6.17	
SC (µmhos/cm)	1561	
Turbidity (ntu)	/	
H_2O Tmp. (°C)	12.22	
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ~~500~~ ml	(F) or UF	HNO3	Diss Metals	
1	1000 ml	F or (UF)	Raw	Common	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF			
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: Split collected on Diss Metals for EPA - 130-S

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco East Helena
Project Code: 1054
Sample Team Member(s): 9/6/07
Laboratory Used: Energy

Site Designation: EH-59
Sample Code Number: AEH-0709-131
Sample Date: 9/6/07
Sample Time: 1600 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring- other:
Weather Conditions: calm breeze (windy)
(no precip.) rain snow
(clear) p. cloudy overcast
Air Temperature: °C 75 F

For Groundwater Samples

		Comments
well volume formula:	V = (TD-SWL)x(Dia.^{2}) / 25	
TD (ft):	18'	
SWL (ft):	7.94'	no access/pumping
Casing Diameter (I.D.")	4"	
Water Volume (V) (gal):	6.44	
x 3=(gal.)	19.32	
Actual Vol. Removed (gal.)	22	
Water Level Recovery:	slow (moderate) rapid	

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1546	53.7	1.39	6.64	348	\	13.76	
1548	52.4	1.39	6.65	348	\	13.75	
1550	51.5	1.39	6.65	349	\	13.75	
1552	51.5	1.42	6.66	349	\	13.71	
1554	51.6	1.43	6.66	349	\	13.74	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other
12 Volt

Field Parameters

	Sample	Duplicate
ORP (mV)	51.6	
DO (mg/l)	1.43	
pH	6.66	
SC (µmhos/cm)	349	
Turbidity (ntu)	\	
H_2O Tmp. (°C)	13.74	
Color	Clear	
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
(1)	250 ml	(F) or UF	HNO3	Diss Metals	
(1)	1000 ml	F or (UF)	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments:

Sample Team Member Signature: [signature] Page of

Water Sampling Form ~~ HF-430

Hydrometrics, Inc.
Consulting Scientists and Engineers

Project Name: Asarco East Helena
Project Code: 1054
Sample Team Member(s): JLC/AJ
Laboratory Used: Energy

Site Designation: DH-2
Sample Code Number: AEH-0709-
Sample Date:
Sample Time: (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

		Comments
well volume formula:	V = (TD-SWL)x(Dia.^{2}) / 25	
TD (ft):	66'	
SWL (ft):	57.45'	no access/pumping
Casing Diameter (I.D.")	4"	
Water Volume (V) (gal):	5.47	
x 3=(gal.)	16.42	
Actual Vol. Removed (gal.)	0	
Water Level Recovery:	slow moderate rapid	

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring- other:
Weather Conditions: calm breeze (windy)
(no precip) rain snow
(clear) p. cloudy overcast
Air Temperature: °C 75 °F

For Surface Water Samples

Flow Method: Marsh McBirney Volumetric Flume Weir Estimate
Other Flow or Description:
Flow: gpm cfs Staff Gage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) (grab) composite (pump) bailer other
12 Volt

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other:		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	250 ml	F or UF	HNO3	Diss Metals	
1	1000 ml	F or UF	Raw	Commons	
1	500 ml	F or UF	HCL		
	1000 ml	F or UF	H3PO4		
	VOA	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			
	ml	F or UF			

Comments: Not Enough Water to sample - Couldn't Pump

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: MW-3
Sample Code Number: AEH-0709-132
Sample Date: 09/ 11 /07
Sample Time: 09:25 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: /
Duplicate Sample Time: / /

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 52' Pumping Rate 1.0 gpm
SWL (ft): 30.29' no access/pumping
Casing Diameter (I.D.") 3"
Water Volume (V) (gal): 3.5 V x 3 =(gal) 10.5
MP Description Top of PVC
Actual Vol. Removed (gal.) 12
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip) rain snow (clear) p. cloudy overcast
Air Temperature: °C 40 °F

For Surface Water Samples

Flow Method: Pitot Meter Velocity Meter Other Flow Measurement
Other Flow or Discharge:
Flow: gpm cfs Staff Gauge

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
0912	Pump ON	09					
0914		1.48	7.28	601		10.1	
0916		0.93	7.15	605		9.9	
0918		0.88	7.11	607		9.9	
0922		0.73	7.03	607		9.9	
0924		0.71	7.02	607		9.9	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12V

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)	0.71	
pH	7.02	
SC (µmhos/cm)	607	
Turbidity (ntu)		
H_2O Tmp. (°C)	9.9	
Color	None	
Other; odor	Petro	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments:

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: MW-7
Sample Code Number: AEH-0709-133
Sample Date: 09/ 11 /07
Sample Time: 1000 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip) rain snow (clear) p. cloudy overcast
Air Temperature: °C 55 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25 — Comments

TD(ft.) 62 Pumping Rate 0.2 gpm
SWL (ft): 57.04 no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): .8 V x 3 =(gal) 2.4
MP Description Top of PVC
Actual Vol. Removed (gal.) 1.2
Water Level Recovery: slow moderate rapid

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
0950	Pump ON						
0954	[redacted]	~~278~~ 7.49	7.26	272	[redacted]	11.2	
0956	[redacted]	9.11	7.32	264	[redacted]	10.4	
10:00	[redacted]	9.26	7.39	264	[redacted]	11.7	
10:02	[redacted]				[redacted]		

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	
DO (mg/l)	9.26	
pH	7.39	
SC (µmhos/cm)	264	
Turbidity (ntu)	[redacted]	
H_2O Tmp. (°C)	11.7	
Color	None	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
1	500	F	HCL	As 3/5	

Comments: Let Recover after 1 Well Volume and Sampled

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: DH-3
Sample Code Number: AEH-0709-134
Sample Date: 09/ 11 /07
Sample Time: 12:00 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: AEH-0709-136
Duplicate Sample Time: 12:05

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 54 Pumping Rate 0.8 ~~1.0~~ gpm
SWL (ft): 29.08 no access/pumping
Casing Diameter (I.D.") 4"
Water Volume (V) (gal): 16 V x 3 =(gal) 48
MP Description Top of PVC
Actual Vol. Removed (gal.) 50
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip.) rain snow (clear) p. cloudy overcast
Air Temperature: °C 65 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
11:00	Pump ON						
11:20	[redacted]	3.24	6.94	525	[redacted]	10.0	
11:32	[redacted]	3.52	6.95	530	[redacted]	10.2	
11:44	[redacted]	3.55	6.92	530	[redacted]	10.3	
11:56	[redacted]	3.66	6.91	524	[redacted]	10.3	
12:03	[redacted]	3.69	6.90	524	[redacted]	10.4	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12V

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	3.69	
pH	6.90	SAME
SC (µmhos/cm)	524	
Turbidity (ntu)	[redacted]	[redacted]
H_2O Tmp. (°C)	10.4	
Color	None	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
1	500	F	HCL	As 3/5	

Comments:

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: DI Blank
Sample Code Number: AEH-0709- 135
Sample Date: 09/ 11 /07
Sample Time: 1130 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) Pumping Rate gpm
SWL (ft): no access/pumping
Casing Diameter (I.D.")
Water Volume (V) (gal): V x 3 =(gal)
MP Description
Actual Vol. Removed (gal.)
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water monitoring well domestic well adit seep spring other: DI Blank
Weather Conditions: (calm) breeze windy (no precip) rain snow clear (p. cloudy) overcast
Air Temperature: °C 75 °F

For Surface Water Samples

Flow Method: Wind Current Measure Flow Weir Weight
Flow Rate or Description:
Flow: gpm cfs Staff Gage

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear slight moderate very

Sample Method: (describe) grab composite pump bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other; odor		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments: DI Blank

Sample Team Member Signature: Rich L

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STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: EH-50
Sample Code Number: AEH-0709- 137
Sample Date: 09/ 11 /07
Sample Time: 1445 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 45 Pumping Rate 1.2 gpm
SWL (ft): 22.14 no access/pumping
Casing Diameter (I.D.") 4"
Water Volume (V) (gal): 15 V x 3 =(gal) 45
MP Description Top of PVC
Actual Vol. Removed (gal.) 45
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring other:
Weather Conditions: (calm) breeze windy
(no precip.) rain snow
clear (p. cloudy) overcast
Air Temperature: °C 75 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1405	Pump	on					
1417	[redacted]	6.14	6.72	1739	[redacted]	12.18	
~~1424~~ 1423		5.58	6.66	1731		12.20	
1429		5.41	6.62	1727		12.2	
1435		5.34	6.62	1723		12.3	
1443		5.27	6.60	1722		12.3	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	5.27	
pH	6.60	
SC (µmhos/cm)	1722	
Turbidity (ntu)	[redacted]	[redacted]
H_2O Tmp. (°C)	12.3	
Color	None	
Other; odor	~~Petro~~ None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments:

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: Rinsate Blank
Sample Code Number: AEH-0709- 138
Sample Date: 09/ 11 /07
Sample Time: 1500 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: $V = \frac{(TD-SWL)x(Dia.^2)}{25}$

Comments

TD(ft.) _____ Pumping Rate _____ gpm
SWL (ft): _____ no access/pumping
Casing Diameter (I.D.") _____
Water Volume (V) (gal): _____ V x 3 =(gal) _____
MP Description _____
Actual Vol. Removed (gal.) _____
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes **No** Photo taken: Yes **No**
Site Type: DRY surface water process water
monitoring well domestic well adit seep
spring other:
Weather Conditions: **calm** breeze windy
no precip. rain snow
clear **p. cloudy** overcast
Air Temperature: °C 88 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) grab composite pump bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other; odor		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments: Rinsate Blank

Sample Team Member Signature: [signature] Page of

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STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: EH-51
Sample Code Number: AEH-0709- 139
Sample Date: 09/ 11 /07
Sample Time: 1530 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring other:
Weather Conditions: calm (breeze) windy
(no precip) rain snow
clear (p. cloudy) overcast
Air Temperature: °C 88 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25 — Comments

TD(ft.) 30' Pumping Rate 2.0 gpm
SWL (ft): 13.05' no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): 11 V x 3 =(gal) 33
MP Description Top PVC
Actual Vol. Removed (gal.) 34
Water Level Recovery: slow moderate rapid

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
15:08	Pump	ON					
15:12	[redacted]	4.77	6.74	2131	[redacted]	11.7	
15:16	[redacted]	5.19	6.75	2151	[redacted]	11.9	
15:20	[redacted]	5.21	6.75	2154	[redacted]	11.9	
15:22	[redacted]	5.27	6.75	2148	[redacted]	11.9	
1525	[redacted]	5.27	6.75	2154	[redacted]	11.9	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	5.27	
pH	6.75	
SC (µmhos/cm)	2154	
Turbidity (ntu)	[redacted]	[redacted]
H_2O Tmp. (°C)	11.9	
Color	None	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments:

Sample Team Member Signature: [signature] Page of

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STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: EH-52
Sample Code Number: AEH-0709-140
Sample Date: 09/ 11 /07
Sample Time: 1600 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: /
Duplicate Sample Time: /

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25 — Comments

TD(ft.) 13' Pumping Rate 10 gpm
SWL (ft): 7.68' no access/pumping
Casing Diameter (I.D.") 4"
Water Volume (V) (gal): 3 V x 3 =(gal) 9
MP Description Top of PVC
Actual Vol. Removed (gal.) 10.0
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: calm (breeze) windy (no precip.) rain snow clear (p. cloudy) overcast
Air Temperature: °C 85 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1543	Pump	ON					
1545	[redacted]	3.53	6.65	654	[redacted]	15.9	
1547	[redacted]	3.00	6.70	~~2~~666	[redacted]	15.9	
1549	[redacted]	2.80	6.72	674	[redacted]	15.9	
1551	[redacted]	2.79	~~6.74~~ 6.73	674	[redacted]	15.9	
1553	[redacted]	2.77	~~6.76~~ 6.73	675	[redacted]	15.9	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	2.77	
pH	6.73	
SC (µmhos/cm)	675	
Turbidity (ntu)	[redacted]	[redacted]
H_2O Tmp. (°C)	15.9	
Color	None	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments:

Sample Team Member Signature: [signature] Page of

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STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: DH-52
Sample Code Number: AEH-0709- 141
Sample Date: 09/ 12 /07
Sample Time: 0850 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: /
Duplicate Sample Time: /

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25 — Comments

TD(ft.) 17 Pumping Rate 1.0 gpm
SWL (ft): 6.78 no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): 2.0 V x 3 =(gal) 6.0
MP Description Top of PVC
Actual Vol. Removed (gal.) 6.0
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip.) rain snow (clear) p. cloudy overcast
Air Temperature: °C 55 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
0844	Pump	ON					
0846	[redacted]	0.36	7.23	1176	[redacted]	11.9	
0847	[redacted]	0.34	7.23	1177	[redacted]	11.9	
0848	[redacted]	0.31	7.23	1175	[redacted]	11.9	
0849	[redacted]	0.30	7.22	1177	[redacted]	11.9	
0850	[redacted]	0.24	7.27	1179	[redacted]	11.9	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	0.24	
pH	7.27	
SC (µmhos/cm)	1179	
Turbidity (ntu)	[redacted]	[redacted]
H_2O Tmp. (°C)	11.9	
Color	None	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments:

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: Rinsate Blank
Sample Code Number: AEH-0709-142
Sample Date: 09/12/07
Sample Time: 0910 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: $V = \frac{(TD-SWL)x(Dia.^2)}{25}$ Comments

TD(ft.) _____ Pumping Rate _____ gpm
SWL (ft): _____ no access/pumping
Casing Diameter (I.D.") _____
Water Volume (V) (gal): _____ V x 3 =(gal) _____
MP Description _____
Actual Vol. Removed (gal.) _____
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water monitoring well domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip.) rain snow (clear) p. cloudy overcast
Air Temperature: °C 55 °F

For Surface Water Samples

Flow Method: Gallon Volume: Vel. Vol. Vel. Area: Flow Meter: Other Flow or Description:
Flow: cfs Start Gauge:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) grab composite pump bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other; odor		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments: Rinsate Blank

Sample Team Member Signature: [signature] Page of

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STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: DH58
Sample Code Number: AEH-0709-143
Sample Date: 09/12/07
Sample Time: 0925 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)

Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:

Weather Conditions: (calm) breeze windy (no precip) rain snow (clear) p. cloudy overcast

Air Temperature: °C 55 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) / 25

Comments

TD(ft.) 24' Pumping Rate 1.0 gpm

SWL (ft): 17.22' no access/pumping

Casing Diameter (I.D.") 2"

Water Volume (V) (gal): 1.0 V x 3 =(gal) 3.0

MP Description Top of PVC

Actual Vol. Removed (gal.) 6.0

Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Width of Stream: Velocity: Depth: Grid: Bottom Composition:

Flow: cfs Stage: ft

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
0916	Pump ON						
0917		3.56	6.65	1044		13.7	
0918		3.14	6.65	1047		13.7	
0919		2.11	6.68	1059		13.8	
0920		2.03	6.68	1060		13.8	
0922		1.82	6.69	1063		13.9	
0924		1.71	6.69	1067		13.9	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)	1.71	
pH	6.69	
SC (µmhos/cm)	1067	
Turbidity (ntu)		
H_2O Tmp. (°C)	13.9	
Color	None	
Other; odor		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments:

Sample Team Member Signature: RLL

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STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: APSD-1
Sample Code Number: AEH-0709-149
Sample Date: 09/12/07
Sample Time: 1040 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 12' Pumping Rate 1.0 gpm
SWL (ft): 7.73' no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): 1.0 V x 3 =(gal) 3.0
MP Description Top of PVC
Actual Vol. Removed (gal.) 6.0
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip.) rain snow (clear) p. cloudy overcast
Air Temperature: °C 60 °F

For Surface Water Samples

Flow Method: Bucket/Stopwatch Weirs Other Flow Measurement Devices
Other Flow or Description
Time Flow Stabilized

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1033	Pump ON						
1035		1.23	6.53	1951		18.4	
1036		1.03	6.54	1950		18.4	
1037		0.81	6.58	1960		19.1	
1038		0.80	6.59	1967		19.2	
1039		0.68	6.60	1970		19.5	
1040		0.62	6.61	1981		19.7	

Turbidity: (circle) (clear) moderate (slight) very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)	0.62	
pH	6.61	
SC (µmhos/cm)	1981	
Turbidity (ntu)		
H_2O Tmp. (°C)	19.7	
Color	Lt Brown	
Other; odor	Strong	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
1	500	F	HCL	As 3/5	
1	250	4F	HNO3	T metals	

Comments:

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: APSD-15
Sample Code Number: AEH-0709-145
Sample Date: 09/ 12 /07
Sample Time: 11:15 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 28 Pumping Rate _____ gpm
SWL (ft): 10.82 no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): 3.0 V x 3 =(gal) 9.0
MP Description Top of PVC
Actual Vol. Removed (gal.) 10
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes **(No)** Photo taken: Yes **(No)**
Site Type: DRY surface water process water **(monitoring well)** domestic well adit seep spring other:
Weather Conditions: **(calm)** breeze windy **(no precip.)** rain snow **(clear)** p. cloudy overcast
Air Temperature: °C 65 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1105	Pump on						
1107	[redacted]	0.73	6.44	~~5.0~~596	[redacted]	11.2	
1109	[redacted]	0.65	6.47	569	[redacted]	11.2	
1111	[redacted]	1.49	6.54	546	[redacted]	11.4	
1113	[redacted]	1.58	6.57	540	[redacted]	11.4	
1115	[redacted]	1.64	6.57	538	[redacted]	11.5	

Turbidity: (circle) clear moderate slight **(very)**

Sample Method: (describe) **(grab)** composite **(pump)** bailer other 12V

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	1.64	
pH	6.57	
SC (µmhos/cm)	538	
Turbidity (ntu)	[redacted]	[redacted]
H_2O Tmp. (°C)	No. 11.5	
Color	Brown	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
1	500	F	HCL	As 3/5	
1	250	UF	HNO3	T metals	

Comments:

Sample Team Member Signature: Rick L Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: APSD-16
Sample Code Number: AEH-0709- 146
Sample Date: 09/ 12 /07
Sample Time: 1140 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 38' Pumping Rate 1.0 gpm
SWL (ft): 6.38'
no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): 3.4 V x 3 =(gal) 9.0
MP Description Top of PVC
Actual Vol. Removed (gal.) 10.0
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip.) rain snow (clear) p. cloudy overcast
Air Temperature: °C 65 °F

For Surface Water Samples

Flow Method: Sample Source: Channel Flow: Est. Flow:
Direct Precipitation: Est. Pool Vol.:
Time: Depth: Sediment Depth:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1130	Pump ON						
1132		0.19	6.59	544		11.6	
1134		0.19	6.60	543		11.5	
1136		0.20	6.61	541		11.5	
1138		0.16	6.67	532		11.5	
1140		0.11	6.73	525		11.4	

Turbidity: (circle) clear moderate slight (very)

Sample Method: (describe) (grab) composite (pump) bailer other
12V

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)	0.11	
pH	6.73	
SC (µmhos/cm)	525	
Turbidity (ntu)		
H_2O Tmp. (°C)	11.4	
Color	Brown	
Other; odor	Strong	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
1	500	F	HCL	As 3/5	
1	250	UF	HNO3	T metals	

Comments:

Sample Team Member Signature: Rick L

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STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: APSD-4
Sample Code Number: AEH-0709-147
Sample Date: 09/ 12 /07
Sample Time: 1310 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 14 Pumping Rate .5 gpm
SWL (ft): 10.61 no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): .5 V x 3 =(gal) 1.5
MP Description Top of PVC
Actual Vol. Removed (gal.) 4.0
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip) rain snow (clear) p. cloudy overcast
Air Temperature: °C 65 °F

For Surface Water Samples

Flow Method: Min. Reading: Max. Reading: Stage: Flow: Pool: Pressure
Other Flow Observations:
Water: Air: Sediment:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1304	Pump ON						
1308		0.76	6.25	269		18.1	
1309		0.73	6.26	269		18.4	
1310		0.58	6.28	277		18.9	
1311		0.41	6.32	283		19.3	
1312		0.41	6.32	283		19.3	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) 12v bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)	0.41	
pH	6.32	
SC (µmhos/cm)	283	
Turbidity (ntu)		
H_2O Tmp. (°C)	19.3	
Color	None	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
1	500	F	HCL	As 3/5	
1	250	uF	HNO3	T metals	

Comments:

Sample Team Member Signature: Rich L

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STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: APSD-3
Sample Code Number: AEH-0709-148
Sample Date: 09/12/07
Sample Time: 1340 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water monitoring well domestic well adit seep spring other:
Weather Conditions: calm breeze windy no precip. rain snow clear p. cloudy overcast
Air Temperature: °C 65 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.²) / 25 — Comments

TD(ft.) 13 Pumping Rate .5 gpm
SWL (ft): 10.52 no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): .4 V x 3 =(gal) 1.5
MP Description Top of PVC
Actual Vol. Removed (gal.) 4.0
Water Level Recovery: slow moderate rapid

For Surface Water Samples

Flow Method: Stream Velocity Weir Other
Other Flow or Discharge Data:
Flow: cfs

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1330	Pump	ON					
1334		0.68	6.35	1016		18.9	
1335		0.60	6.37	1025		19.2	
1336		0.59	6.37	1026		19.5	
1337		0.59	6.39	1032		19.5	
1338		0.63	6.39	1035		19.6	

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) grab composite pump bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)	0.63	
pH	6.39	
SC (µmhos/cm)	1035	
Turbidity (ntu)		
H_2O Tmp. (°C)	19.6	
Color	None	
Other; odor	Aqua	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
1	500	F	HCL	As 3/5	
1	250	UF	HNO3	T metals	

Comments:

Sample Team Member Signature: RLL

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STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: EH-111
Sample Code Number: AEH-0709- 149
Sample Date: 09/ 12 /07
Sample Time: 1415 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: AEH-0709-150
Duplicate Sample Time: 1430

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 54 Pumping Rate 1.0 gpm
SWL (ft): 22.33 no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): 5 V x 3 =(gal) 15
MP Description Top of PVC
Actual Vol. Removed (gal.) 15
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: calm (breeze) windy (no precip.) rain snow clear (p. cloudy) overcast
Air Temperature: °C 65 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1400	Pump	ON					
1405	[redacted]	0.35	6.38	1691	[redacted]	12.1	
1408	[redacted]	0.26	6.34	1707	[redacted]	12.1	
1401	[redacted]	0.25	6.32	1715	[redacted]	12.0	
1413	[redacted]	0.23	6.31	1716	[redacted]	12.0	
1415	[redacted]	0.21	6.31	1717	[redacted]	12.0	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	0.21	SAME
pH	6.31	
SC (µmhos/cm)	1717	
Turbidity (ntu)	[redacted]	
H_2O Tmp. (°C)	12.0	
Color	None	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments:

Sample Team Member Signature: Rich T

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STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: EH-100
Sample Code Number: AEH-0709- 151
Sample Date: 09/ 12 /07
Sample Time: 1510 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 61 Pumping Rate _____ gpm
SWL (ft): 22.74 no access/pumping
Casing Diameter (I.D.") 4"
Water Volume (V) (gal): 24 V x 3 =(gal) 72
MP Description Top of PVC
Actual Vol. Removed (gal.) 72
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
monitoring well domestic well adit seep
spring other:
Weather Conditions: calm (breeze) windy
(no precip) rain snow
clear (p. cloudy) overcast
Air Temperature: °C 70 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1434	Pump	ON					
1446	[redacted]	0.24	6.05	1724	[redacted]	12.1	
1450	[redacted]	0.20	6.05	1731	[redacted]	12.1	
1456	[redacted]	0.17	6.05	1738	[redacted]	12.1	
1402	[redacted]	0.13	6.05	1743	[redacted]	12.1	
1510	[redacted]	0.16	6.05	1744	[redacted]	12.1	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	0.16	
pH	6.05	
SC (µmhos/cm)	1744	
Turbidity (ntu)	[redacted]	[redacted]
H_2O Tmp. (°C)	12.1	
Color	None	
Other; odor	yes	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments:

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: DI Blank
Sample Code Number: AEH-0709- 152
Sample Date: 09/ 12 /07
Sample Time: 1500 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: $V = \frac{(TD-SWL)x(Dia.^2)}{25}$

Comments

TD(ft.) Pumping Rate gpm
SWL (ft): no access/pumping
Casing Diameter (I.D.")
Water Volume (V) (gal): V x 3 =(gal)
MP Description
Actual Vol. Removed (gal.)
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
monitoring well domestic well adit seep
spring other:
Weather Conditions: (calm) breeze windy
(no precip.) rain snow
clear (p. cloudy) overcast
Air Temperature: °C 50 °F

For Surface Water Samples

Flow Method: Mid-Stream Depth-Int. Point Sampling
Other Flow or Description:
Flow: cfs Stream Stage:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) grab composite pump bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other; odor		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments: DI Blank

Sample Team Member Signature: RL Rid Z

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STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: EH-60
Sample Code Number: AEH-0709-153
Sample Date: 09/13/07
Sample Time: 0915 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: AEH-0709-154
Duplicate Sample Time: 0925

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 29' Pumping Rate 1.5 gpm
SWL (ft): 18.56' no access/pumping
Casing Diameter (I.D.") 4"
Water Volume (V) (gal): 7.0 V x 3 =(gal) 21
MP Description Top of PVC
Actual Vol. Removed (gal.)
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip.) rain snow clear (p. cloudy) overcast
Air Temperature: °C 50 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
09:00		2.98	6.58	1735		12.76	
09:05		1.58	6.57	1670		12.70	
09:08		1.17	6.56	1643		12.65	
09 10		1.10	6.55	1639		12.7	
0912		1.05	6.54	1635		12.6	
0914		1.04	6.55	1836		12.6	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	1.04	
pH	6.55	
SC (µmhos/cm)	1836	
Turbidity (ntu)	[redacted]	[redacted]
H_2O Tmp. (°C)	12.6	
Color	None	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments:

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: EH-106
Sample Code Number: AEH-0709-155
Sample Date: 09/ 13 /07
Sample Time: 0950 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 50' Pumping Rate 1.0 gpm
SWL (ft): 22 72' no access/pumping
Casing Diameter (I.D.")
Water Volume (V) (gal): 4 V x 3 =(gal) 12
MP Description Top of PVC
Actual Vol. Removed (gal.) 15
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring other:
Weather Conditions: (calm) breeze windy
(no precip.) rain snow
(clear) p. cloudy overcast
Air Temperature: °C 50 °F

For Surface Water Samples

Flow Method: Meter Velocity Calculation Other Flow Method Description:
Flow: cfs Staff Gauge:

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
Pr 0937	Pump on						
0941		1.10	6.20	1655		11.8	
0943		0.90	~~6.12~~ 6.19	1655		11.8	
0945		0.86	6.20	1658		11.8	
0946		0.84	6.20	1658		11.8	
0949		0.74	6.20	1658		11.8	

Turbidity: (circle) clear slight (moderate) very

Sample Method: (describe) (grab) composite (pump) bailer other
12v

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)	0.74	
pH	6.20	
SC (µmhos/cm)	1658	
Turbidity (ntu)		
H_2O Tmp. (°C)	11.8	
Color	Lt Brown	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
1	500	F	HCL	As 3/5	

Comments:

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: DI Blank
Sample Code Number: AEH-0709- 156
Sample Date: 09/ 13 /07
Sample Time: 156 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) _____ Pumping Rate _____ gpm
SWL (ft): _____ no access/pumping
Casing Diameter (I.D.") _____
Water Volume (V) (gal): _____ V x 3 =(gal) _____
MP Description _____
Actual Vol. Removed (gal.) _____
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
monitoring well domestic well adit seep
spring other:
Weather Conditions: (calm) breeze windy
(no precip.) rain snow
(clear) p. cloudy overcast
Air Temperature: °C 50 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) grab composite pump bailer other

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other; odor		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments: DI Blank

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: EH-109
Sample Code Number: AEH-0709- 157
Sample Date: 09/ 13 /07
Sample Time: 1045 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 71 Pumping Rate 1.75 gpm
SWL (ft): 20.06 no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): 8 V x 3 =(gal) 24
MP Description Top of PVC
Actual Vol. Removed (gal.)
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes **No** Photo taken: Yes **No**
Site Type: DRY surface water process water **monitoring well** domestic well adit seep spring other:
Weather Conditions: **calm** breeze windy **no precip** rain snow **clear** p. cloudy overcast
Air Temperature: °C 50 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1014	Pump O	N					
1022	[redacted]	0.23	6.51	1644	[redacted]	12.4	
1024	[redacted]	0.20	6.51	1644	[redacted]	12.4	
1025	[redacted]	0.22	6.51	1644	[redacted]	12.4	
1026	[redacted]	0.22	6.51	1642	[redacted]	12.4	
1028	[redacted]	0.18	6.51	1644	[redacted]	12.4	

Turbidity: (circle) **clear** moderate slight very

Sample Method: (describe) **grab** composite **pump** bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	
DO (mg/l)	0.18	
pH	6.51	
SC (µmhos/cm)	1644	
Turbidity (ntu)	[redacted]	
H_2O Tmp. (°C)	12.4	
Color	None	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments:

Sample Team Member Signature: Rich L

Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: Rinsate Blank
Sample Code Number: AEH-0709- 158
Sample Date: 09/ 13 /07
Sample Time: 1030 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) _____ Pumping Rate _____ gpm
SWL (ft): _____ no access/pumping
Casing Diameter (I.D.") _____
Water Volume (V) (gal): _____ V x 3 =(gal) _____
MP Description _____
Actual Vol. Removed (gal.) _____
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes **No** Photo taken: Yes **No**
Site Type: DRY surface water process water
monitoring well domestic well adit seep
spring other: _____
Weather Conditions: **calm** breeze windy
no precip. rain snow
clear p. cloudy overcast
Air Temperature: °C 55 °F

For Surface Water Samples

Flow Method: Mid Channel Weir Flume Spill Pumping
Other Flow or Discharge: _____
Flow: cfs Clarity: Clear Cloudy

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes

Turbidity: (circle) clear moderate slight very

Sample Method: (describe) grab composite pump bailer other _____

Field Parameters

	Sample	Duplicate
ORP (mV)		
DO (mg/l)		
pH		
SC (µmhos/cm)		
Turbidity (ntu)		
H_2O Tmp. (°C)		
Color		
Other; odor		

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments: Rinsate Blank

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: DH-59
Sample Code Number: AEH-0709- 159
Sample Date: 09/ 13 /07
Sample Time: 1100 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: /
Duplicate Sample Time: /

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 24.5' Pumping Rate 4.0.5 gpm
SWL (ft): 17.34' no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): 1.1 V x 3 =(gal) 3.3
MP Description Top of PVC
Actual Vol. Removed (gal.) 6
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip.) rain snow (clear) p. cloudy overcast
Air Temperature: °C 55 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1048	Pump	ON					
1056	[redacted]	0.58	6.50	620	[redacted]	11.8	
1057	[redacted]	0.57	6.50	620	[redacted]	11.8	
1058	[redacted]	0.56	6.50	620	[redacted]	11.8	
1059	[redacted]	0.49	6.49	620	[redacted]	11.8	
1100	[redacted]	0.33	6.45	618	[redacted]	11.9	
1102	[redacted]	0.34	6.44	618	[redacted]	11.9	

Turbidity: (circle) (clear) moderate slight very

Sample Method: (describe) (grab) composite (pump) bailer other
12 –

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	0.34	
pH	6.44	
SC (µmhos/cm)	618	
Turbidity (ntu)	[redacted]	[redacted]
H_2O Tmp. (°C)	11.9	
Color	None	
Other; odor	none	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
1	500	F	HCL	As 3/5	

Comments:

Sample Team Member Signature: Rich L

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Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: DH-64
Sample Code Number: AEH-0709- 160
Sample Date: 09/ 13 /07
Sample Time: 1130 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25 . Comments

TD(ft.) 57' Pumping Rate 1.5 gpm
SWL (ft): 30.18' no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): 4 V x 3 =(gal) 12
MP Description Top of PVC
Actual Vol. Removed (gal.) 12
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water monitoring well domestic well adit seep spring other:
Weather Conditions: calm (breeze) windy (no precip) rain snow (clear) p. cloudy overcast
Air Temperature: °C 60 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1120	Pump	ON					
1124	[redacted]	0.46	6.76	1864	[redacted]	12.5	
1125	[redacted]	0.37	6.71	1939	[redacted]	12.5	
1126	[redacted]	0.35	6.71	1941	[redacted]	12.5	
1127	[redacted]	0.28	6.69	1960	[redacted]	12.5	
1128	[redacted]	0.28	6.69	1961	[redacted]	12.5	

Turbidity: (circle) (clear) moderate slight very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	
DO (mg/l)	0.28	
pH	6.69	
SC (µmhos/cm)	1961	
Turbidity (ntu)	[redacted]	
H_2O Tmp. (°C)	12.5	
Color	None	
Other; odor	None	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments:

Sample Team Member Signature: [signature] Page of

Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: DH-24
Sample Code Number: AEH-0709-161
Sample Date: 09/13/07
Sample Time: 1310 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25

Comments

TD(ft.) 17 Pumping Rate _____ gpm
SWL (ft): 9.54 no access/pumping
Casing Diameter (I.D.") 4"
Water Volume (V) (gal): 5.0 V x 3 =(gal) 15
MP Description Top of PVC
Actual Vol. Removed (gal.) 15
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water
(monitoring well) domestic well adit seep
spring other:
Weather Conditions: (calm) breeze windy
(no precip.) rain snow
(clear) p. cloudy overcast
Air Temperature: °C 65 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
12:57	Pump	ON					
12:59	[redacted]	0.65	6.15	4120	[redacted]	14.9	
1301	[redacted]	0.64	6.15	4120	[redacted]	14.9	
1303	[redacted]	0.	6.57		[redacted]		
1305	[redacted]				[redacted]		
1307	[redacted]				[redacted]		
	[redacted]				[redacted]		

Turbidity: (circle) clear moderate (slight) very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	0.64	
pH	6.15	
SC (µmhos/cm)	4120	
Turbidity (ntu)	[redacted]	[redacted]
H_2O Tmp. (°C)	14.9	
Color	Brown	
Other; odor	Yes	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
1	500	F	HCL	As 3/5	
1	250	UF	HNO3	Tracab	

Comments: Pumped dry Let Recover and sampled

Sample Team Member Signature: [signature]

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Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: APSD-2
Sample Code Number: AEH-0709-162
Sample Date: 09/13/07
Sample Time: 1355 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #: /
Duplicate Sample Time: /

For Groundwater Samples

well volume formula: $V = \frac{(TD-SWL)x(Dia.^2)}{25}$ Comments

TD(ft.) 24.65 Pumping Rate .5 gpm
SWL (ft): 12.49 no access/pumping
Casing Diameter (I.D.") 2"
Water Volume (V) (gal): 2 V x 3 =(gal) 6
MP Description Top of PVC
Actual Vol. Removed (gal.) 6
Water Level Recovery: slow moderate rapid

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip.) rain snow clear (p. cloudy) overcast
Air Temperature: °C 65 °F

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1340	Pump	ON					
1344	[redacted]	2.81	6.63	4354	[redacted]	17.0 23.2	
1346	[redacted]	1.19	6.68	4260	[redacted]	17.1 23.4	
1348	[redacted]	0.57	6.65	4170	[redacted]	17 24.1	
1350	[redacted]	0.43	6.71	4546	[redacted]	23.5	
1352	[redacted]	0.42	6.71	4547	[redacted]	21.4	

Turbidity: (circle) clear moderate (slight) very

Sample Method: (describe) (grab) composite (pump) bailer other
12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	[redacted]
DO (mg/l)	0.42	
pH	6.71	
SC (µmhos/cm)	4547	
Turbidity (ntu)	[redacted]	[redacted]
H_2O Tmp. (°C)	21.4	
Color	Brown	
Other; odor	aqua	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
1	500	F	HCL	As 3/5	
1	250	uF	HNO3	Tmetals	

Comments: Temp is ~~low~~ due to tubing on black cap

Sample Team Member Signature: Richl

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Hydrometrics, Inc.

STANDARD OPERATING PROCEDURE
WATER SAMPLING FORM
HF-FORM-430

Consulting Scientists, Engineers and Contractors

Project Name: ASARCO E. Helena
Project Code: 1054
Sample Team Member(s): R,Lane, A, Jourdonnais
Laboratory Used: Energy Labs

Site Designation: DH-21
Sample Code Number: AEH-0709-163
Sample Date: 09/13/07
Sample Time: 1430 (military)

If Duplicate Sample Collected, Please Record Below

Duplicate Sample Code #:
Duplicate Sample Time:

Site Conditions

New Site: Yes (No) Photo taken: Yes (No)
Site Type: DRY surface water process water (monitoring well) domestic well adit seep spring other:
Weather Conditions: (calm) breeze windy (no precip) rain snow clear (p. cloudy) overcast
Air Temperature: °C 70 °F

For Groundwater Samples

well volume formula: V = (TD-SWL)x(Dia.^{2}) / 25 — Comments

TD(ft.) 29.5 Pumping Rate gpm
SWL (ft): 24.14 no access/pumping
Casing Diameter (I.D.")
Water Volume (V) (gal): 3 V x 3 =(gal) 9
MP Description
Actual Vol. Removed (gal.)
Water Level Recovery: slow moderate rapid

For Surface Water Samples

[redacted]

Field Parameter Stabilization

Time (military)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/l)	pH	S.C. (µmhos/cm)	Turbidity (n.t.u.)	Temperature (°C)	Additional Parameters or Notes
1415	Pump	ON					
1419	[redacted]	5.26	9.47	3727	[redacted]	15.5	
1420	[redacted]	5.50	9.97	3711	[redacted]	15.4	
1421	[redacted]	5.30	9.97	3702	[redacted]	15.3	
1423	[redacted]	5.45	9.97	3689	[redacted]	15.3	
1424	[redacted]	5.47	9.47	3690	[redacted]	15.3	

Turbidity: (circle) (clear) slight moderate very

Sample Method: (describe) (grab) composite (pump) bailer other 12v

Field Parameters

	Sample	Duplicate
ORP (mV)	[redacted]	
DO (mg/l)	5.47	
pH	9.47	
SC (µmhos/cm)	3690	
Turbidity (ntu)	[redacted]	
H_2O Tmp. (°C)	15.3	
Color	Brown	
Other; odor	gas Strong	

Bottles Collected

Quantity	Size	Filter or Unfilt.	Preservative	Parameter	Additional Notes
1	500	F	HNO3	D Metals	
1	L	UF	Raw	Comm	
~~1~~	~~500~~	~~F~~	~~HCL~~	~~As 3/5~~	

Comments: DO Not Working because of Air in the Tubing

Sample Team Member Signature: [signature] Page of

APPENDIX 4

CHAIN OF CUSTODIES

CHAIN OF CUSTODY RECORD

Hydrometrics, Inc.®

2727 Airport Road • Helena, Montana 59601 • (406) 443-4150

PROJ. NO.: 1054

PROJECT NAME: Asarco E Helena

SAMPLERS: (Signature) [signature]

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH								REMARKS
9/5/07	0840		X	AEH-0709-107	2	X		X													[illegible]
	0940			" -108																	002
	0945			" -109																	003
	1025			" -110	1	1		1													004
	1030			" -110-S	1			X													005
	1055			" -111	2	X															006
	1100			" -112																	007
	1125			" -113																	008
	1320			" -114																	009
	1330			" -115																	010
	1410			" -116																	011
	1520			" -117	1	1		1													012
	1525			" -117-S	1			X													013
1	1610			" -118	2	X		X													014

Relinquished (Signature)	Date/Time	Received by: (Signature)	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
[signature]	9/5/07 1640	[signature]	5.0 temp		Other ____ Air Bill # ____

Relinquished (Signature)	Date/Time	Received by: (Signature)	Remarks
			Please rush AEH-0709-115

Relinquished (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Enclosed:
				☐ Parameter sheet w/detection limits ☐ QA/QC standard mixing instructions ☐ Cover letter ☐ Other ____

HFORM-1-5/99

Return results & electronic copy to:
Computer Dept. at address at top of page

Split Samples:
[] Accepted [] Declined ____ Signature

Hydrometrics, Inc.®

2727 Airport Road • Helena, Montana 59601 • (406) 443-4150

CHAIN OF CUSTODY RECORD

PROJ. NO.: 1054

PROJECT NAME: Asarco E Helena

SAMPLERS: (Signature) [signature]

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH							REMARKS
9/6/07	0820		X	AEH-0709-119	2	X		X												HG709052-001
	0935			" -120	2															002
	0945			" -121	2															003
	1020			" -122	2															004
	1100			" -123	2															005
	1130			" -124	2															006
	1155			" -125	2															007
	1330			" -126	2															008
	1355			" -127	2															009
	1425			" -128	2															010
	1440			" -129	2															011
	1505			" -130	2															012
	1600			" -131	2															013

Relinquished (Signature)	Date/Time	Received by: (Signature)	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
[signature]	6/9/07 1650	[signature]	temp 13.5		Other ____ Air Bill # ____
Relinquished (Signature)	Date/Time	Received by: (Signature)	Remarks: Please Rush AEH-0709-126		
Relinquished (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Enclosed: ☐ Parameter sheet w/detection limits ☐ QA/QC standard mixing instructions ☐ Cover letter ☐ Other ____	

HFORM-1-5/99

Return results & electronic copy to:
Computer Dept. at address at top of page

Split Samples: ☐ Accepted ☐ Declined ____ Signature

CHAIN OF CUSTODY RECORD

Hydrometrics, Inc.®

2727 Airport Road • Helena, Montana 59601 • (406) 443-4150

Date Rec time KT

PROJ. NO.	PROJECT NAME
1054	ASARCO E. Helena

SAMPLERS: *(Signature)*

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH							REMARKS
9/11/07	0925		X	AEH-0709-132	2	X		X												H070902-001
	1000			133																002
	1200			134																003
	1130			135																004
	1205			136																005
	1445			137																006
	1500			138																007
	1530			134																008
	1600			140																009

Relinquished *(Signature)*	Date/Time	Received by: *(Signature)*	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
	9/11/07 16:27		Energy Lab	B.11 ASARCO	Other Hand delivered Air Bill #
Relinquished (Signature)	Date/Time	Received by: *(Signature)*	Remarks		
			H.O Temp		
Relinquished (Signature)	Date/Time	Received for Laboratory by: *(Signature)*	Date/Time	Enclosed: ☐ Parameter sheet w/detection limits ☐ QA/QC standard mixing instructions ☐ Cover letter ☐ Other	

Split Samples:
[] Accepted [] Declined
Signature

HFORM-1-5/99

Return results & electronic copy to:
Computer Dept. at address at top of page

CHAIN OF CUSTODY RECORD

Hydrometrics, Inc.®

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PROJ. NO.	PROJECT NAME
1054	ASARCO E. Helena

SAMPLERS: (Signature) [signature]

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH	A3/5 | HCL							REMARKS
9/12/07	0930		X	AEH-0704-141		X		+											H0709015-001		
	0940			142																	002
	0925			143																	003
	1040			144						X				X							004
	1115			145						X				X							005
	1140			146						X				X							006
	1310			147						X				X							007
	1340			148						X				X							008
	1415			149																	009
	1430			150																	010
	1510			151																	011
	1500			152																	012

Relinquished (Signature)	Date/Time	Received by: (Signature)	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
[signature]	9/12/07 15:23	Amanda Blackburn	Energy Lab		Other ____ Air Bill # ____
Relinquished (Signature)	Date/Time	Received by: (Signature)	Remarks: temp 2.0		
Relinquished (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Enclosed: ☐ Parameter sheet w/detection limits ☐ QA/QC standard mixing instructions ☐ Cover letter ☐ Other ____	

HFORM-1-5/99

Return results & electronic copy to:
Computer Dept. at address at top of page

Split Samples: [] Accepted [] Declined ____ Signature

Hydrometrics, Inc.®

2727 Airport Road • Helena, Montana 59601 • (406) 443-4150

CHAIN OF CUSTODY RECORD

PROJ. NO.: 1054

PROJECT NAME: ASARCO E. Helena

SAMPLERS: (Signature) [signature]

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH	As 3/5							REMARKS
9/13/07	0915		X	AEH-0709-153	2	X		X													H0709135.001
	0925			154																	002
	0950			155																	003
	1000			156																	004
	1045			157																	005
	1030			158																	006
	1100			159																	007
	1130			160																	008
	1310			161	X 4				X					X							009
	1355			162	X 4				X					X							162 gets 010
	1430			163																	Both Parameter 011
																					Lists
9/13/07				ERA Standard	3																

Relinquished (Signature)	Date/Time	Received by: (Signature)	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
[signature]	9/13/07 1550	[signature]	Energy Lab	B.'11 ASARCO	Other ____ Air Bill # ____
Relinquished (Signature)	**Date/Time**	**Received by: (Signature)**	**Remarks**		
			Temp 2.0		
Relinquished (Signature)	**Date/Time**	**Received for Laboratory by: (Signature)**	**Date/Time**	**Enclosed:** ☒ Parameter sheet w/detection limits ☒ QA/QC standard mixing instructions ☒ Cover letter ☐ Other ____	

HFORM-1-5/99

Return results & electronic copy to:
Computer Dept. at address at top of page

Split Samples: [] Accepted [] Declined ____ Signature

APPENDIX 5

LABORATORY REPORT

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 3161 East Lyndale Ave. • Helena, MT 59604
877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

ANALYTICAL SUMMARY REPORT

September 20, 2007

Asarco Consulting
5219 N Shirley Street
Ruston, WA 98407

Workorder No.: H07090010

Project Name: 1054 Asarco E. Helena

Energy Laboratories Inc received the following 7 samples from Asarco Consulting on 9/4/2007 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H07090010-001	AEH-0709-100	09/04/07 11:25	09/04/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity pH Solids, Total Dissolved Solids, Total Suspended Sulfate
H07090010-002	AEH-0709-101	09/04/07 12:10	09/04/07	Aqueous	Same As Above
H07090010-003	AEH-0709-102	09/04/07 12:15	09/04/07	Aqueous	Same As Above
H07090010-004	AEH-0709-103	09/04/07 13:25	09/04/07	Aqueous	Same As Above
H07090010-005	AEH-0709-104	09/04/07 13:50	09/04/07	Aqueous	Same As Above
H07090010-006	AEH-0709-105	09/04/07 15:20	09/04/07	Aqueous	Same As Above
H07090010-007	AEH-0709-106	09/04/07 15:25	09/04/07	Aqueous	Same As Above

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT, EPA # MT00005
eli-c - Energy Laboratories, Inc. - Casper, WY, EPA# WY00002
eli-f - Energy Laboratories, Inc. - Idaho Falls, ID, EPA # ID00942
eli-g - Energy Laboratories, Inc. - Gillette, WY, EPA# WY00006
eli-h - Energy Laboratories, Inc. - Helena, MT, EPA# MT00945
eli-r - Energy Laboratories, Inc. - Rapid City, SD, EPA# SD00012
eli-t - Energy Laboratories, Inc. - College Station, TX, EPA# TX01520

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES, INC. will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories are indicated within the Laboratory Analytical Report.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

ELI appreciates the opportunity to provide you with this analytical service. For additional information, including certifications, and analytical services visit our web page www.energylab.com.

Report Approved By: _____

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Jonathan Hager
Assistant Lab Manager

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CASE NARRATIVE

NONE

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090010-001
Client Sample ID: AEH-0709-100

Report Date: 09/20/07
Collection Date: 09/04/07 11:25
DateReceived: 09/04/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.5	s.u.		0.1		A4500-H B	09/06/07 11:08 / sld
Conductivity	601	umhos/cm		1		A2510 B	09/05/07 09:23 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/05/07 13:29 / kjw
Solids, Total Dissolved TDS @ 180 C	396	mg/L		10		A2540 C	09/05/07 13:14 / kjw
INORGANICS							
Sulfate	138	mg/L		1		A4500-SO4 E	09/05/07 11:36 / abb
Alkalinity, Total as CaCO3	130	mg/L		1		A2320 B	09/06/07 13:18 / abb
Bicarbonate as HCO3	160	mg/L		1		A2320 B	09/06/07 13:18 / abb
Chloride	14	mg/L		1		A4500-Cl C	09/06/07 13:36 / sld
METALS, DISSOLVED							
Arsenic	0.002	mg/L		0.002		E200.8	09/07/07 20:56 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/07/07 20:56 / eli-b
Calcium	56	mg/L		1		E200.7	09/08/07 03:57 / eli-b
Copper	0.004	mg/L		0.004		E200.7	09/11/07 16:05 / eli-b
Iron	0.03	mg/L		0.02		E200.7	09/11/07 16:05 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/07/07 20:56 / eli-b
Magnesium	13	mg/L		1		E200.7	09/08/07 03:57 / eli-b
Manganese	0.18	mg/L		0.01		E200.7	09/08/07 03:57 / eli-b
Potassium	4	mg/L		1		E200.7	09/08/07 03:57 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/07/07 20:56 / eli-b
Sodium	62	mg/L		1		E200.7	09/08/07 03:57 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/08/07 03:57 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client:	Asarco Consulting	Report Date:	09/20/07
Project:	1054 Asarco E. Helena	Collection Date:	09/04/07 12:10
Lab ID:	H07090010-002	DateReceived:	09/04/07
Client Sample ID:	AEH-0709-101	Matrix:	Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.4	s.u.		0.1		A4500-H B	09/06/07 11:09 / sld
Conductivity	354	umhos/cm		1		A2510 B	09/05/07 09:24 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/05/07 13:29 / kjw
Solids, Total Dissolved TDS @ 180 C	228	mg/L		10		A2540 C	09/05/07 13:14 / kjw
INORGANICS							
Sulfate	63	mg/L		1		A4500-SO4 E	09/05/07 11:40 / abb
Alkalinity, Total as CaCO3	98	mg/L		1		A2320 B	09/06/07 13:22 / abb
Bicarbonate as HCO3	120	mg/L		1		A2320 B	09/06/07 13:22 / abb
Chloride	4	mg/L		1		A4500-Cl C	09/06/07 13:36 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/07/07 21:03 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/07/07 21:03 / eli-b
Calcium	40	mg/L		1		E200.7	09/08/07 04:04 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/11/07 16:16 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/11/07 16:16 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/07/07 21:03 / eli-b
Magnesium	7	mg/L		1		E200.7	09/08/07 04:04 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/08/07 04:04 / eli-b
Potassium	5	mg/L		1		E200.7	09/08/07 04:04 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/07/07 21:03 / eli-b
Sodium	19	mg/L		1		E200.7	09/08/07 04:04 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/08/07 04:04 / eli-b

Report Definitions:
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QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client:	Asarco Consulting	Report Date:	09/20/07
Project:	1054 Asarco E. Helena	Collection Date:	09/04/07 12:15
Lab ID:	H07090010-003	DateReceived:	09/04/07
Client Sample ID:	AEH-0709-102	Matrix:	Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	09/06/07 11:10 / sld
Conductivity	354	umhos/cm		1		A2510 B	09/05/07 09:25 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/05/07 13:29 / kjw
Solids, Total Dissolved TDS @ 180 C	225	mg/L		10		A2540 C	09/05/07 13:28 / kjw
INORGANICS							
Sulfate	64	mg/L		1		A4500-SO4 E	09/05/07 11:41 / abb
Alkalinity, Total as CaCO3	99	mg/L		1		A2320 B	09/06/07 13:27 / abb
Bicarbonate as HCO3	120	mg/L		1		A2320 B	09/06/07 13:27 / abb
Chloride	5	mg/L		1		A4500-Cl C	09/06/07 13:34 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/06/07 17:53 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/06/07 17:53 / eli-b
Calcium	41	mg/L		1		E200.7	09/08/07 04:08 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/06/07 17:53 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/11/07 16:23 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/06/07 17:53 / eli-b
Magnesium	8	mg/L		1		E200.7	09/08/07 04:08 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/06/07 17:53 / eli-b
Potassium	5	mg/L		1		E200.7	09/08/07 04:08 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/06/07 17:53 / eli-b
Sodium	18	mg/L		1		E200.7	09/08/07 04:08 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/06/07 17:53 / eli-b

Report Definitions:
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MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client:	Asarco Consulting	Report Date:	09/20/07
Project:	1054 Asarco E. Helena	Collection Date:	09/04/07 13:25
Lab ID:	H07090010-004	DateReceived:	09/04/07
Client Sample ID:	AEH-0709-103	Matrix:	Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.3	s.u.		0.1		A4500-H B	09/06/07 11:14 / sld
Conductivity	11	umhos/cm		1		A2510 B	09/05/07 09:27 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/05/07 13:29 / kjw
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	09/05/07 13:28 / kjw
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/05/07 11:41 / abb
Alkalinity, Total as CaCO3	3	mg/L		1		A2320 B	09/06/07 13:31 / abb
Bicarbonate as HCO3	4	mg/L		1		A2320 B	09/06/07 13:31 / abb
Chloride	ND	mg/L		1		A4500-Cl C	09/06/07 13:42 / sld
METALS, DISSOLVED							
Arsenic	0.004	mg/L		0.002		E200.8	09/06/07 18:24 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/06/07 18:24 / eli-b
Calcium	ND	mg/L		1		E200.7	09/08/07 04:12 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/06/07 18:24 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/11/07 16:26 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/06/07 18:24 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/08/07 04:12 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/06/07 18:24 / eli-b
Potassium	ND	mg/L		1		E200.7	09/08/07 04:12 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/06/07 18:24 / eli-b
Sodium	2	mg/L		1		E200.7	09/08/07 04:12 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/06/07 18:24 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090010-005
Client Sample ID: AEH-0709-104

Report Date: 09/20/07
Collection Date: 09/04/07 13:50
DateReceived: 09/04/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.4	s.u.		0.1		A4500-H B	09/06/07 11:17 / sld
Conductivity	353	umhos/cm		1		A2510 B	09/05/07 09:29 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/05/07 13:29 / kjw
Solids, Total Dissolved TDS @ 180 C	225	mg/L		10		A2540 C	09/05/07 13:28 / kjw
INORGANICS							
Sulfate	70	mg/L		1		A4500-SO4 E	09/05/07 11:43 / abb
Alkalinity, Total as CaCO3	91	mg/L		1		A2320 B	09/06/07 13:35 / abb
Bicarbonate as HCO3	110	mg/L		1		A2320 B	09/06/07 13:35 / abb
Chloride	7	mg/L		1		A4500-Cl C	09/06/07 13:43 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/07/07 21:11 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/07/07 21:11 / eli-b
Calcium	39	mg/L		1		E200.7	09/08/07 04:23 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/11/07 16:30 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/11/07 16:30 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/07/07 21:11 / eli-b
Magnesium	8	mg/L		1		E200.7	09/08/07 04:23 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/08/07 04:23 / eli-b
Potassium	3	mg/L		1		E200.7	09/08/07 04:23 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/07/07 21:11 / eli-b
Sodium	17	mg/L		1		E200.7	09/08/07 04:23 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/08/07 04:23 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090010-006
Client Sample ID: AEH-0709-105

Report Date: 09/20/07
Collection Date: 09/04/07 15:20
DateReceived: 09/04/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.3	s.u.		0.1		A4500-H B	09/06/07 11:18 / sld
Conductivity	708	umhos/cm		1		A2510 B	09/05/07 09:30 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/05/07 13:29 / kjw
Solids, Total Dissolved TDS @ 180 C	492	mg/L		10		A2540 C	09/05/07 13:28 / kjw
INORGANICS							
Sulfate	190	mg/L		1		A4500-SO4 E	09/05/07 11:43 / abb
Alkalinity, Total as CaCO3	110	mg/L		1		A2320 B	09/06/07 13:39 / abb
Bicarbonate as HCO3	140	mg/L		1		A2320 B	09/06/07 13:39 / abb
Chloride	17	mg/L		1		A4500-Cl C	09/06/07 13:45 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/07/07 21:19 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/07/07 21:19 / eli-b
Calcium	66	mg/L		1		E200.7	09/08/07 04:27 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/11/07 16:41 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/11/07 16:41 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/07/07 21:19 / eli-b
Magnesium	14	mg/L		1		E200.7	09/08/07 04:27 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/08/07 04:27 / eli-b
Potassium	8	mg/L		1		E200.7	09/08/07 04:27 / eli-b
Selenium	0.058	mg/L		0.005		E200.8	09/07/07 21:19 / eli-b
Sodium	63	mg/L		1		E200.7	09/08/07 04:27 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/08/07 04:27 / eli-b

Report Definitions:
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QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090010-007
Client Sample ID: AEH-0709-106

Report Date: 09/20/07
Collection Date: 09/04/07 15:25
DateReceived: 09/04/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.1	s.u.		0.1		A4500-H B	09/06/07 11:20 / sld
Conductivity	11	umhos/cm		1		A2510 B	09/05/07 09:30 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/05/07 13:29 / kjw
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	09/05/07 13:28 / kjw
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/05/07 11:43 / abb
Alkalinity, Total as CaCO3	2	mg/L		1		A2320 B	09/06/07 13:41 / abb
Bicarbonate as HCO3	2	mg/L		1		A2320 B	09/06/07 13:41 / abb
Chloride	ND	mg/L		1		A4500-Cl C	09/06/07 13:46 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/07/07 21:27 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/07/07 21:27 / eli-b
Calcium	ND	mg/L		1		E200.7	09/08/07 04:31 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/11/07 16:44 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/11/07 16:44 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/07/07 21:27 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/08/07 04:31 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/08/07 04:31 / eli-b
Potassium	ND	mg/L		1		E200.7	09/08/07 04:31 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/07/07 21:27 / eli-b
Sodium	1	mg/L		1		E200.7	09/08/07 04:31 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/08/07 04:31 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090010

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B								Batch: 070906A-ALK-W	
Sample ID: MBLK1_070906A	Method Blank				Run: TITTR_070906B			09/06/07 13:08	
Alkalinity, Total as CaCO3	ND	mg/L	1						
Bicarbonate as HCO3	ND	mg/L	1						
Sample ID: LCS1_070906A	Laboratory Control Sample				Run: TITTR_070906B			09/06/07 13:12	
Alkalinity, Total as CaCO3	600	mg/L	4.0	100	90	110			
Sample ID: H07090010-007AMS	Sample Matrix Spike				Run: TITTR_070906B			09/06/07 13:46	
Alkalinity, Total as CaCO3	580	mg/L	4.0	96	90	110			
Sample ID: H07090010-007AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070906B			09/06/07 13:49	
Alkalinity, Total as CaCO3	570	mg/L	4.0	95	90	110	1.2	20	
Sample ID: H07090032-008BDUP	Sample Duplicate				Run: TITTR_070906B			09/06/07 14:53	
Alkalinity, Total as CaCO3	170	mg/L	4.0				1.2	20	
Bicarbonate as HCO3	200	mg/L	4.0				1.2	20	
Method: A2510 B								Batch: 070905A-COND-PROBE-W	
Sample ID: LCS1_070905A	Laboratory Control Sample				Run: COND_070905A			09/05/07 09:10	
Conductivity	724	umhos/cm	1.0	101	90	110			
Sample ID: H07090010-004ADUP	Sample Duplicate				Run: COND_070905A			09/05/07 09:28	
Conductivity	11.0	umhos/cm	1.0				0.2	10	
Method: A2540 C								Batch: 070905A-SLDS-TDS-W	
Sample ID: MBLK1_070905A	Method Blank				Run: SOLIDS_070905B			09/06/07 11:05	
Solids, Total Dissolved TDS @ 180 C	5	mg/L	1.0						
Sample ID: LCS1_070905A	Laboratory Control Sample				Run: SOLIDS_070905B			09/05/07 13:14	
Solids, Total Dissolved TDS @ 180 C	995	mg/L	10	99	90	110			
Sample ID: H07090010-001ADUP	Sample Duplicate				Run: SOLIDS_070905B			09/05/07 13:14	
Solids, Total Dissolved TDS @ 180 C	399	mg/L	10				0.8	20	
Method: A2540 D								Batch: 070905A-SLDS-TSS-W	
Sample ID: LCS1_070905A	Laboratory Control Sample				Run: SOLIDS_070905A			09/05/07 13:13	
Solids, Total Suspended TSS @ 105 C	1840	mg/L	10	92	70	130			
Sample ID: H07090010-001ADUP	Sample Duplicate				Run: SOLIDS_070905A			09/05/07 13:29	
Solids, Total Suspended TSS @ 105 C	ND	mg/L	10				0.0	10	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090010

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-Cl C									Batch: 070906A-CL-TTR-W
Sample ID: MBLK1_070906A	Method Blank				Run: TITTR_070906A				09/06/07 13:21
Chloride	ND	mg/L	0.7						
Sample ID: LCS1_070906A	Laboratory Control Sample				Run: TITTR_070906A				09/06/07 13:23
Chloride	110	mg/L	1.0	110	90	110			
Sample ID: H07090010-002AMS	Sample Matrix Spike				Run: TITTR_070906A				09/06/07 13:39
Chloride	14.5	mg/L	1.0	100	90	110			
Sample ID: H07090010-002AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070906A				09/06/07 13:40
Chloride	14.5	mg/L	1.0	100	90	110	0.0	20	
Method: A4500-H B									Batch: 070906A-PH-W
Sample ID: LCS1_070906A	Laboratory Control Sample				Run: PH_070906A				09/06/07 10:55
pH	7.01	s.u.	0.10	100	98.6	101.4			
Method: A4500-SO4 E									Batch: 070905A-SO4-TURB-W
Sample ID: MBLK1_070905A	Method Blank				Run: TURBIDITY_070905A				09/05/07 11:21
Sulfate	ND	mg/L	0.6						
Sample ID: LCS1_070905A	Laboratory Control Sample				Run: TURBIDITY_070905A				09/05/07 11:22
Sulfate	103	mg/L	1.1	103	90	110			
Sample ID: H07080262-006AMS	Sample Matrix Spike				Run: TURBIDITY_070905A				09/05/07 11:33
Sulfate	20.0	mg/L	1.0	100	80	120			
Sample ID: H07080262-006AMSD	Sample Matrix Spike Duplicate				Run: TURBIDITY_070905A				09/05/07 11:33
Sulfate	19.5	mg/L	1.0	98	80	120	2.4	10	
Sample ID: H07090010-004ADUP	Sample Duplicate				Run: TURBIDITY_070905A				09/05/07 11:42
Sulfate	ND	mg/L	1.0				0.0	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090010

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: SUB-B99016	
Sample ID: QCS	Initial Calibration Verification Standard							09/07/07 09:00	
Calcium	48.5	mg/L	1.0	97	90	110			
Magnesium	49.0	mg/L	1.0	98	90	110			
Manganese	4.86	mg/L	0.010	97	90	110			
Potassium	47.6	mg/L	1.0	95	90	110			
Sodium	48.0	mg/L	1.0	96	90	110			
Zinc	1.01	mg/L	0.010	101	90	110			
Method: E200.7								Batch: B_R99016	
Sample ID: MB-TJADIS070906A	Method Blank				Run: SUB-B99016			09/07/07 09:30	
Calcium	ND	mg/L	0.2						
Magnesium	ND	mg/L	0.1						
Manganese	ND	mg/L	0.001						
Potassium	ND	mg/L	0.07						
Sodium	ND	mg/L	0.2						
Zinc	ND	mg/L	0.001						
Sample ID: LFB-TJADIS070906A	Laboratory Fortified Blank				Run: SUB-B99016			09/07/07 09:34	
Calcium	50.2	mg/L	1.0	100	85	115			
Magnesium	50.3	mg/L	1.0	101	85	115			
Manganese	4.97	mg/L	0.010	99	85	115			
Potassium	49.4	mg/L	1.0	99	85	115			
Sodium	49.3	mg/L	1.0	99	85	115			
Zinc	1.03	mg/L	0.010	103	85	115			
Sample ID: B07090278-003BMS2	Sample Matrix Spike				Run: SUB-B99016			09/08/07 03:49	
Calcium	230.2	mg/L	1.0	104	70	130			
Magnesium	176.1	mg/L	1.0	110	70	130			
Manganese	11.21	mg/L	0.010	112	70	130			
Potassium	120.0	mg/L	1.0	107	70	130			
Sodium	411.8	mg/L	1.0	93	70	130			
Zinc	2.325	mg/L	0.010	116	70	130			
Sample ID: B07090278-003BMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99016			09/08/07 03:53	
Calcium	228.0	mg/L	1.0	102	70	130	0.9	20	
Magnesium	174.6	mg/L	1.0	109	70	130	0.9	20	
Manganese	11.21	mg/L	0.010	112	70	130	0.0	20	
Potassium	119.8	mg/L	1.0	107	70	130	0.2	20	
Sodium	409.5	mg/L	1.0	91	70	130	0.6	20	
Zinc	2.315	mg/L	0.010	116	70	130	0.4	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090010

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: B_R99016
Sample ID: B07090375-002BMS2	Sample Matrix Spike				Run: SUB-B99016				09/08/07 04:46
Calcium	115.9	mg/L	1.0	105	70	130			
Magnesium	67.40	mg/L	1.0	110	70	130			
Manganese	5.850	mg/L	0.010	117	70	130			
Potassium	62.99	mg/L	1.0	109	70	130			
Sodium	166.8	mg/L	1.0	105	70	130			
Zinc	1.207	mg/L	0.010	121	70	130			
Sample ID: B07090375-002BMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99016				09/08/07 04:50
Calcium	116.5	mg/L	1.0	106	70	130	0.5	20	
Magnesium	66.49	mg/L	1.0	108	70	130	1.4	20	
Manganese	5.260	mg/L	0.010	105	70	130	11	20	
Potassium	60.21	mg/L	1.0	104	70	130	4.5	20	
Sodium	162.5	mg/L	1.0	97	70	130	2.6	20	
Zinc	1.090	mg/L	0.010	109	70	130	10	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090010

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: SUB-B99214	
Sample ID: QCS	Initial Calibration Verification Standard							09/11/07 15:11	
Copper	0.983	mg/L	0.010	98	90	110			
Iron	5.02	mg/L	0.030	100	90	110			
Method: E200.7								Batch: B_R99214	
Sample ID: MB-SPDIS070911A	Method Blank				Run: SUB-B99214			09/11/07 15:58	
Copper	0.003	mg/L	0.001						
Iron	ND	mg/L	0.002						
Sample ID: LFB-SPDIS070911A	Laboratory Fortified Blank				Run: SUB-B99214			09/11/07 16:02	
Copper	1.00	mg/L	0.010	100	85	115			
Iron	5.08	mg/L	0.030	102	85	115			
Sample ID: H07090010-001B	Sample Matrix Spike				Run: SUB-B99214			09/11/07 16:09	
Copper	1.001	mg/L	0.010	100	70	130			
Iron	5.098	mg/L	0.030	101	70	130			
Sample ID: H07090010-001B	Sample Matrix Spike Duplicate				Run: SUB-B99214			09/11/07 16:12	
Copper	1.001	mg/L	0.010	100	70	130	0.0	20	
Iron	5.151	mg/L	0.030	102	70	130	1.0	20	
Sample ID: B07090375-003BMS2	Sample Matrix Spike				Run: SUB-B99214			09/11/07 17:02	
Copper	1.002	mg/L	0.010	100	70	130			
Iron	5.055	mg/L	0.030	101	70	130			
Sample ID: B07090375-003BMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99214			09/11/07 17:06	
Copper	1.001	mg/L	0.010	100	70	130	0.1	20	
Iron	5.058	mg/L	0.030	101	70	130	0.1	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090010

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: SUB-B99004
Sample ID: QCS - ME070515A, ME0	Initial Calibration Verification Standard								09/06/07 10:19
Arsenic	0.050	mg/L	0.0050	100	90	110			
Cadmium	0.025	mg/L	0.0010	99	90	110			
Copper	0.048	mg/L	0.010	96	90	110			
Lead	0.049	mg/L	0.010	99	90	110			
Manganese	0.24	mg/L	0.010	96	90	110			
Selenium	0.050	mg/L	0.0050	99	90	110			
Zinc	0.049	mg/L	0.010	99	90	110			
Sample ID: QCS - ME070515A, ME0	Initial Calibration Verification Standard								09/06/07 21:07
Arsenic	0.051	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	101	90	110			
Copper	0.049	mg/L	0.010	97	90	110			
Lead	0.050	mg/L	0.010	100	90	110			
Manganese	0.25	mg/L	0.010	100	90	110			
Selenium	0.050	mg/L	0.0050	101	90	110			
Zinc	0.051	mg/L	0.010	101	90	110			
Method: E200.8									Batch: B_R99004
Sample ID: LRB	Method Blank				Run: SUB-B99004				09/06/07 12:43
Arsenic	7E-05	mg/L	4E-05						
Cadmium	ND	mg/L	9E-06						
Copper	ND	mg/L	7E-05						
Lead	ND	mg/L	8E-06						
Manganese	ND	mg/L	5E-05						
Selenium	ND	mg/L	0.0001						
Zinc	0.0003	mg/L	3E-05						
Sample ID: LFB	Laboratory Fortified Blank				Run: SUB-B99004				09/06/07 12:50
Arsenic	0.049	mg/L	0.0050	99	85	115			
Cadmium	0.050	mg/L	0.0010	99	85	115			
Copper	0.050	mg/L	0.010	100	85	115			
Lead	0.050	mg/L	0.010	100	85	115			
Manganese	0.051	mg/L	0.010	101	85	115			
Selenium	0.049	mg/L	0.0050	99	85	115			
Zinc	0.051	mg/L	0.010	102	85	115			
Sample ID: H07090010-003B	Sample Matrix Spike				Run: SUB-B99004				09/06/07 18:01
Arsenic	0.2579	mg/L	0.0050	103	70	130			
Cadmium	0.2546	mg/L	0.0010	102	70	130			
Copper	0.2551	mg/L	0.010	102	70	130			
Lead	0.2561	mg/L	0.010	102	70	130			

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090010

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_R99004
Sample ID: H07090010-003B	Sample Matrix Spike				Run: SUB-B99004				09/06/07 18:01
Manganese	0.2597	mg/L	0.010	104	70	130			
Selenium	0.2588	mg/L	0.0050	103	70	130			
Zinc	0.2681	mg/L	0.010	105	70	130			
Sample ID: H07090010-003B	Sample Matrix Spike Duplicate				Run: SUB-B99004				09/06/07 18:09
Arsenic	0.2556	mg/L	0.0050	102	70	130	0.9	20	
Cadmium	0.2552	mg/L	0.0010	102	70	130	0.3	20	
Copper	0.2519	mg/L	0.010	100	70	130	1.3	20	
Lead	0.2577	mg/L	0.010	103	70	130	0.7	20	
Manganese	0.2561	mg/L	0.010	102	70	130	1.4	20	
Selenium	0.2552	mg/L	0.0050	101	70	130	1.4	20	
Zinc	0.2666	mg/L	0.010	104	70	130	0.5	20	

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090010

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: SUB-B99082
Sample ID: QCS - ME070515A, ME0	Initial Calibration Verification Standard								09/07/07 12:42
Arsenic	0.050	mg/L	0.0050	100	90	110			
Cadmium	0.025	mg/L	0.0010	98	90	110			
Lead	0.049	mg/L	0.010	99	90	110			
Selenium	0.049	mg/L	0.0050	98	90	110			
Sample ID: QCS - ME070515A, ME0	Initial Calibration Verification Standard								09/07/07 23:38
Arsenic	0.050	mg/L	0.0050	100	90	110			
Cadmium	0.024	mg/L	0.0010	97	90	110			
Lead	0.049	mg/L	0.010	99	90	110			
Selenium	0.049	mg/L	0.0050	97	90	110			
Sample ID: QCS - ME070515A, ME0	Initial Calibration Verification Standard								09/08/07 13:01
Arsenic	0.049	mg/L	0.0050	99	90	110			
Cadmium	0.024	mg/L	0.0010	97	90	110			
Lead	0.049	mg/L	0.010	98	90	110			
Selenium	0.049	mg/L	0.0050	97	90	110			
Sample ID: QCS - ME070515A, ME0	Initial Calibration Verification Standard								09/08/07 15:05
Arsenic	0.050	mg/L	0.0050	100	90	110			
Cadmium	0.025	mg/L	0.0010	99	90	110			
Lead	0.049	mg/L	0.010	98	90	110			
Selenium	0.049	mg/L	0.0050	99	90	110			
Method: E200.8									Batch: B_R99082
Sample ID: LRB	Method Blank				Run: SUB-B99082				09/07/07 13:44
Arsenic	ND	mg/L	4E-05						
Cadmium	3E-05	mg/L	9E-06						
Lead	ND	mg/L	8E-06						
Selenium	ND	mg/L	0.0001						
Sample ID: LFB	Laboratory Fortified Blank				Run: SUB-B99082				09/07/07 13:52
Arsenic	0.050	mg/L	0.0050	101	85	115			
Cadmium	0.050	mg/L	0.0010	99	85	115			
Lead	0.050	mg/L	0.010	101	85	115			
Selenium	0.051	mg/L	0.0050	102	85	115			
Sample ID: B07090200-001AMS	Sample Matrix Spike				Run: SUB-B99082				09/07/07 19:54
Arsenic	0.05113	mg/L	0.0050	98	70	130			
Cadmium	0.04775	mg/L	0.0010	96	70	130			
Lead	0.05170	mg/L	0.010	102	70	130			
Selenium	0.04827	mg/L	0.0050	97	70	130			

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090010

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_R99082
Sample ID: B07090200-001AMSD	Sample Matrix Spike Duplicate				Run: SUB-B99082			09/07/07 20:02	
Arsenic	0.05164	mg/L	0.0050	99	70	130	1.0	20	
Cadmium	0.04856	mg/L	0.0010	97	70	130	1.7	20	
Lead	0.05241	mg/L	0.010	104	70	130	1.4	20	
Selenium	0.04882	mg/L	0.0050	98	70	130	1.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Hydrometrics, Inc.®

2727 Airport Road • Helena, Montana 59601 • (406) 443-4150

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
1059	Asarco E Helena

SAMPLERS: *(Signature)*

DATE	TIME	COMP	GRAB	SAMPLE NUMBER	NO. OF CONTAINERS	Commons UF/RAW	Nutrients UF/H_2SO_4	Diss. Metal F/HNO_3	CN UF/NaOH	Total Metals UF/HNO_3	Total Recoverable Metals UF/HNO_3	BTEX	TPH							REMARKS
9/14/07	1125		X	AEH-~~0708~~ 0709 -100	2	X		X									H070900010-001			All labels
	1210			" " -101															002	are
	1215			" " -102															003	AEH-0709
	1325			" " -103															004	
	1350			" " -104															005	
	1520			" " -105															006	
	1525			" " -106															007	

Relinquished *(Signature)*	Date/Time	Received by: *(Signature)*	Lab	P.O. #	Shipped via: Bus, Fed Ex, UPS
	9/14/07 1606		temp 5.5		Other Air Bill #
Relinquished (Signature)	**Date/Time**	**Received by: (Signature)**	**Remarks**		
Relinquished (Signature)	**Date/Time**	**Received for Laboratory by: (Signature)**	**Date/Time**	Enclosed: ☐ Parameter sheet w/detection limits ☐ QA/QC standard mixing instructions ☐ Cover letter ☐ Other	

HFORM-1-5/99

Return results & electronic copy to:
Computer Dept. at address at top of page

Split Samples:
[] Accepted [] Declined _____ Signature

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

September
~~August~~ 4, 2007

Energy Laboratories, Inc
Helena, MT 59601

RE: Asarco East Helena Bi-monthly Monitoring & Slurry Wall Groundwater Samples

Dear Energy Labs:

Enclosed are 7 ground water samples with identification codes AEH-~~0708~~ 0709-100 through -106, collected at the Asarco East Helena plant site on September 4, 2007. Samples should be analyzed for parameters per the chain-of-custody and following attached parameter list Table B, Slurry Wall. Arsenic speciation samples need to be shipped priority overnight to your Casper lab to be analyzed within 30 hrs of sampling.

The data reports and invoices for analytical work should be directed to Bob Miller at Asarco Consulting, Inc. in Tacoma, Washington. Feel free to call (406-443-4150) Greg Bryce (x155) or myself (x144) if you have any questions about the samples.

Sincerely,

Juliann L Clum
Scientist

Enclosures

K:\PROJECT\1054\ 10708 labcoverGW.DOC

TABLE B. 2007 RESIDENTIAL WELL AND EH-100 SERIES WELL SAMPLING ANALYTICAL PARAMETERS

Parameter	Analytical Technique	Analytical Method	Project Detection Limit (ppm)
Physical Parameters			
PH	PH Meter	SM 4500H-B	
Specific Conductivity	SC Meter	SM 2510 B	
TDS	Gravimetric	SM 2540C	10
TSS	Gravimetric	SM 2540D	10
Common Ions			
Alkalinity	Titrimetric	SM 2320B	1
Bicarbonate	Titrimetric	SM 2320B	1
Sulfate	Turbidimetric	SM 4500S04 E	1
Chloride	Colorimetric	SM 4500 CL C	1
Calcium	ICP	E200.7	5
Magnesium	ICP	E200.7	5
Sodium	ICP	E200.7	5
Potassium	ICP	E200.7	5
Arsenic and Metals			
Arsenic	ICP ICP-MS	200.7 200.8	0.005 (0.002 for residential samples)
Cadmium	ICP ICP-MS	200.7 200.8	0.001
Copper	ICP ICP-MS	200.7 200.8	0.004
Iron	ICP ICP-MS	200.7 200.8	0.020
Manganese	ICP ICP-MS	200.7 200.8	0.015
Lead	ICP ICP-MS	200.7 200.8	0.005
Selenium	ICP ICP-MS	200.7 200.8	0.005
Zinc	ICP ICP-MS	200.7 200.8	0.020
Field Parameters			
SWL	Electric Tape	HF-SOP-10	0.01 ft
Temperature	PH Meter	HF-SOP-20	NA
Dissolved Oxygen (DO)	DO Meter	HF-SOP-22	NA
PH	pH Meter	HF-SOP-20	NA
Specific Conductivity (SC)	SC Meter	HF-SOP-79	NA

Energy Laboratories Inc
Workorder Receipt Checklist

Asarco Consulting

H07090010

Login completed by: Roxanne L. Tubbs

Reviewed by: [illegible]

Reviewed Date: 9/4/07

Date and Time Received: 9/4/2007 4:06 PM

Received by: rlt

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	5.5°C From Field

Energy Laboratories Inc
Workorder Receipt Checklist

H07090010

Asarco Consulting

Login completed by: Roxanne L. Tubbs

Reviewed by: [illegible]

Reviewed Date: 9/4/07

Date and Time Received: 9/4/2007 4:06 PM

Received by: rlt

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	5.5°C From Field
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 3161 East Lyndale Ave. • Helena, MT 59604
877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

ANALYTICAL SUMMARY REPORT

September 20, 2007

Asarco Consulting
5219 N Shirley Street
Ruston, WA 98407

Workorder No.: H07090032

Project Name: 1054 Asarco E. Helena

Energy Laboratories Inc received the following 14 samples from Asarco Consulting on 9/5/2007 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H07090032-001	AEH-0709-107	09/05/07 8:40	09/05/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity pH Solids, Total Dissolved Solids, Total Suspended Sulfate
H07090032-002	AEH-0709-108	09/05/07 9:40	09/05/07	Aqueous	Same As Above
H07090032-003	AEH-0709-109	09/05/07 9:45	09/05/07	Aqueous	Same As Above
H07090032-004	AEH-0709-110	09/05/07 10:25	09/05/07	Aqueous	Same As Above
H07090032-005	AEH-0709-110-S	09/05/07 10:30	09/05/07	Aqueous	
H07090032-006	AEH-0709-111	09/05/07 10:55	09/05/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity pH Solids, Total Dissolved Solids, Total Suspended Sulfate
H07090032-007	AEH-0709-112	09/05/07 11:00	09/05/07	Aqueous	Same As Above
H07090032-008	AEH-0709-113	09/05/07 11:25	09/05/07	Aqueous	Same As Above
H07090032-009	AEH-0709-114	09/05/07 13:20	09/05/07	Aqueous	Same As Above
H07090032-010	AEH-0709-115	09/05/07 13:30	09/05/07	Aqueous	Same As Above
H07090032-011	AEH-0709-116	09/05/07 14:10	09/05/07	Aqueous	Same As Above
H07090032-012	AEH-0709-117	09/05/07 15:20	09/05/07	Aqueous	Same As Above
H07090032-013	AEH-0709-117-S	09/05/07 15:25	09/05/07	Aqueous	
H07090032-014	AEH-0709-118	09/05/07 16:10	09/05/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity pH Solids, Total Dissolved Solids, Total Suspended Sulfate

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BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT, EPA # MT00005
eli-c - Energy Laboratories, Inc. - Casper, WY, EPA# WY00002
eli-f - Energy Laboratories, Inc. - Idaho Falls, ID, EPA # ID00942
eli-g - Energy Laboratories, Inc. - Gillette, WY, EPA# WY00006
eli-h - Energy Laboratories, Inc. - Helena, MT, EPA# MT00945
eli-r - Energy Laboratories, Inc. - Rapid City, SD, EPA# SD00012
eli-t - Energy Laboratories, Inc. - College Station, TX, EPA# TX01520

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES, INC. will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories are indicated within the Laboratory Analytical Report.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

ELI appreciates the opportunity to provide you with this analytical service. For additional information, including certifications, and analytical services visit our web page www.energylab.com.

Report Approved By: _____
Jonathan Hagen
Assistant Lab Manager

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 3161 East Lyndale Ave. • Helena, MT 59604
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Date: *11-Oct-07*

CLIENT: Asarco Consulting
Project: 1054 Asarco E. Helena
Sample Delivery Group: H07090032

CASE NARRATIVE

Do Not analyze samples AEH-0709-110-S & AEH-0709-117-S, samples returned to Hydrometrics, Inc. 10/11 Revised report for sample 006-due to Sulfate results entered incorrectly into computer. Revised report attached.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090032-001
Client Sample ID: AEH-0709-107

Report Date: 09/20/07
Collection Date: 09/05/07 08:40
DateReceived: 09/05/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.9	s.u.		0.1		A4500-H B	09/06/07 11:25 / sld
Conductivity	1000	umhos/cm		1		A2510 B	09/06/07 15:53 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/07/07 13:18 / kjw
Solids, Total Dissolved TDS @ 180 C	718	mg/L		10		A2540 C	09/07/07 13:49 / kjw
INORGANICS							
Sulfate	347	mg/L	D	3		A4500-SO4 E	09/07/07 14:09 / abb
Alkalinity, Total as CaCO3	140	mg/L		1		A2320 B	09/06/07 14:20 / abb
Bicarbonate as HCO3	170	mg/L		1		A2320 B	09/06/07 14:20 / abb
Chloride	45	mg/L		1		A4500-Cl C	09/06/07 13:52 / sld
METALS, DISSOLVED							
Arsenic	0.003	mg/L		0.002		E200.8	09/10/07 12:34 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 12:34 / eli-b
Calcium	103	mg/L		1		E200.7	09/10/07 21:37 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 12:34 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/10/07 21:37 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 12:34 / eli-b
Magnesium	24	mg/L		1		E200.7	09/10/07 21:37 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/10/07 12:34 / eli-b
Potassium	6	mg/L		1		E200.7	09/10/07 21:37 / eli-b
Selenium	0.140	mg/L		0.005		E200.8	09/10/07 12:34 / eli-b
Sodium	72	mg/L		1		E200.7	09/10/07 21:37 / eli-b
Zinc	0.01	mg/L		0.01		E200.8	09/10/07 12:34 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090032-002
Client Sample ID: AEH-0709-108

Report Date: 09/20/07
Collection Date: 09/05/07 09:40
DateReceived: 09/05/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	09/06/07 11:28 / sld
Conductivity	467	umhos/cm		1		A2510 B	09/06/07 15:54 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/07/07 13:19 / kjw
Solids, Total Dissolved TDS @ 180 C	292	mg/L		10		A2540 C	09/07/07 13:50 / kjw
INORGANICS							
Sulfate	79	mg/L	D	3		A4500-SO4 E	09/07/07 13:46 / abb
Alkalinity, Total as CaCO3	150	mg/L		1		A2320 B	09/06/07 14:27 / abb
Bicarbonate as HCO3	180	mg/L		1		A2320 B	09/06/07 14:27 / abb
Chloride	14	mg/L		1		A4500-Cl C	09/06/07 13:55 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/10/07 13:36 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 13:36 / eli-b
Calcium	45	mg/L		1		E200.7	09/10/07 21:48 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 13:36 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/10/07 21:48 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 13:36 / eli-b
Magnesium	15	mg/L		1		E200.7	09/10/07 21:48 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/10/07 13:36 / eli-b
Potassium	3	mg/L		1		E200.7	09/10/07 21:48 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/10/07 13:36 / eli-b
Sodium	25	mg/L		1		E200.7	09/10/07 21:48 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/10/07 13:36 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit

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LABORATORY ANALYTICAL REPORT

Client:	Asarco Consulting	Report Date:	09/20/07
Project:	1054 Asarco E. Helena	Collection Date:	09/05/07 09:45
Lab ID:	H07090032-003	DateReceived:	09/05/07
Client Sample ID:	AEH-0709-109	Matrix:	Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.1	s.u.		0.1		A4500-H B	09/06/07 11:32 / sld
Conductivity	11	umhos/cm		1		A2510 B	09/06/07 15:56 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/07/07 13:19 / kjw
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	09/07/07 13:50 / kjw
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/07/07 13:47 / abb
Alkalinity, Total as CaCO3	3	mg/L		1		A2320 B	09/06/07 14:30 / abb
Bicarbonate as HCO3	4	mg/L		1		A2320 B	09/06/07 14:30 / abb
Chloride	ND	mg/L		1		A4500-Cl C	09/06/07 13:56 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/10/07 13:43 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 13:43 / eli-b
Calcium	ND	mg/L		1		E200.7	09/10/07 21:52 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 13:43 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/10/07 21:52 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 13:43 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/10/07 21:52 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/10/07 13:43 / eli-b
Potassium	ND	mg/L		1		E200.7	09/10/07 21:52 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/10/07 13:43 / eli-b
Sodium	2	mg/L		1		E200.7	09/10/07 21:52 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/10/07 13:43 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090032-004
Client Sample ID: AEH-0709-110

Report Date: 09/20/07
Collection Date: 09/05/07 10:25
DateReceived: 09/05/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.0	s.u.		0.1		A4500-H B	09/06/07 11:35 / sld
Conductivity	1430	umhos/cm		1		A2510 B	09/06/07 15:57 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/07/07 13:20 / kjw
Solids, Total Dissolved TDS @ 180 C	1100	mg/L		10		A2540 C	09/07/07 13:53 / kjw
INORGANICS							
Sulfate	472	mg/L	D	3		A4500-SO4 E	09/07/07 13:48 / abb
Alkalinity, Total as CaCO3	200	mg/L		1		A2320 B	09/06/07 14:35 / abb
Bicarbonate as HCO3	240	mg/L		1		A2320 B	09/06/07 14:35 / abb
Chloride	85	mg/L		1		A4500-Cl C	09/10/07 08:29 / sld
METALS, DISSOLVED							
Arsenic	0.005	mg/L		0.002		E200.8	09/10/07 13:51 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 13:51 / eli-b
Calcium	139	mg/L		1		E200.7	09/10/07 21:55 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 13:51 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/10/07 21:55 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 13:51 / eli-b
Magnesium	41	mg/L		1		E200.7	09/10/07 21:55 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/10/07 13:51 / eli-b
Potassium	6	mg/L		1		E200.7	09/10/07 21:55 / eli-b
Selenium	0.038	mg/L		0.005		E200.8	09/10/07 13:51 / eli-b
Sodium	119	mg/L		1		E200.7	09/10/07 21:55 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/10/07 13:51 / eli-b

Report Definitions:
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QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Revised Date: 10/11/07
Report Date: 09/20/07
Collection Date: 09/05/07 10:55
DateReceived: 09/05/07
Matrix: Aqueous

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090032-006
Client Sample ID: AEH-0709-111

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.0	s.u.		0.1		A4500-H B	09/06/07 11:38 / sld
Conductivity	735	umhos/cm		1		A2510 B	09/06/07 16:00 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/07/07 13:23 / kjw
Solids, Total Dissolved TDS @ 180 C	502	mg/L		10		A2540 C	09/07/07 13:53 / kjw
INORGANICS							
Sulfate	269	mg/L	D	3		A4500-SO4 E	09/07/07 13:50 / abb
Alkalinity, Total as CaCO3	120	mg/L		1		A2320 B	09/06/07 14:39 / abb
Bicarbonate as HCO3	140	mg/L		1		A2320 B	09/06/07 14:39 / abb
Chloride	21	mg/L		1		A4500-Cl C	09/10/07 08:30 / sld
METALS, DISSOLVED							
Arsenic	0.002	mg/L		0.002		E200.8	09/10/07 13:59 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 13:59 / eli-b
Calcium	73	mg/L		1		E200.7	09/10/07 21:59 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 13:59 / eli-b
Iron	0.03	mg/L		0.02		E200.7	09/10/07 21:59 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 13:59 / eli-b
Magnesium	14	mg/L		1		E200.7	09/10/07 21:59 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/10/07 13:59 / eli-b
Potassium	6	mg/L		1		E200.7	09/10/07 21:59 / eli-b
Selenium	0.090	mg/L		0.005		E200.8	09/10/07 13:59 / eli-b
Sodium	55	mg/L		1		E200.7	09/10/07 21:59 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/10/07 13:59 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090032-007
Client Sample ID: AEH-0709-112

Report Date: 09/20/07
Collection Date: 09/05/07 11:00
DateReceived: 09/05/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.0	s.u.		0.1		A4500-H B	09/06/07 11:41 / sld
Conductivity	741	umhos/cm		1		A2510 B	09/06/07 16:02 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/07/07 13:23 / kjw
Solids, Total Dissolved TDS @ 180 C	504	mg/L		10		A2540 C	09/07/07 13:54 / kjw
INORGANICS							
Sulfate	238	mg/L	D	3		A4500-SO4 E	09/07/07 14:10 / abb
Alkalinity, Total as CaCO3	120	mg/L		1		A2320 B	09/06/07 14:43 / abb
Bicarbonate as HCO3	140	mg/L		1		A2320 B	09/06/07 14:43 / abb
Chloride	21	mg/L		1		A4500-Cl C	09/10/07 08:33 / sld
METALS, DISSOLVED							
Arsenic	0.003	mg/L		0.002		E200.8	09/10/07 14:07 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 14:07 / eli-b
Calcium	73	mg/L		1		E200.7	09/10/07 22:03 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 14:07 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/10/07 22:03 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 14:07 / eli-b
Magnesium	15	mg/L		1		E200.7	09/10/07 22:03 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/10/07 14:07 / eli-b
Potassium	6	mg/L		1		E200.7	09/10/07 22:03 / eli-b
Selenium	0.090	mg/L		0.005		E200.8	09/10/07 14:07 / eli-b
Sodium	54	mg/L		1		E200.7	09/10/07 22:03 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/10/07 14:07 / eli-b

Report Definitions:
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D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090032-008
Client Sample ID: AEH-0709-113

Report Date: 09/20/07
Collection Date: 09/05/07 11:25
DateReceived: 09/05/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.0	s.u.		0.1		A4500-H B	09/06/07 11:45 / sld
Conductivity	1470	umhos/cm		1		A2510 B	09/06/07 16:05 / kjw
Solids, Total Suspended TSS @ 105 C	14	mg/L		10		A2540 D	09/07/07 13:24 / kjw
Solids, Total Dissolved TDS @ 180 C	1120	mg/L		10		A2540 C	09/07/07 13:55 / kjw
INORGANICS							
Sulfate	552	mg/L	D	6		A4500-SO4 E	09/07/07 14:10 / abb
Alkalinity, Total as CaCO3	170	mg/L		1		A2320 B	09/06/07 14:49 / abb
Bicarbonate as HCO3	200	mg/L		1		A2320 B	09/06/07 14:49 / abb
Chloride	67	mg/L		1		A4500-Cl C	09/10/07 08:34 / sld
METALS, DISSOLVED							
Arsenic	0.005	mg/L		0.002		E200.8	09/10/07 14:14 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 14:14 / eli-b
Calcium	153	mg/L		1		E200.7	09/10/07 22:07 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 14:14 / eli-b
Iron	0.03	mg/L		0.02		E200.7	09/10/07 22:07 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 14:14 / eli-b
Magnesium	34	mg/L		1		E200.7	09/10/07 22:07 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/10/07 14:14 / eli-b
Potassium	8	mg/L		1		E200.7	09/10/07 22:07 / eli-b
Selenium	0.240	mg/L		0.005		E200.8	09/10/07 14:14 / eli-b
Sodium	120	mg/L		1		E200.7	09/10/07 22:07 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/10/07 14:14 / eli-b

Report Definitions:
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QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090032-009
Client Sample ID: AEH-0709-114

Report Date: 09/20/07
Collection Date: 09/05/07 13:20
DateReceived: 09/05/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.3	s.u.		0.1		A4500-H B	09/06/07 11:49 / sld
Conductivity	587	umhos/cm		1		A2510 B	09/06/07 16:06 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/07/07 13:24 / kjw
Solids, Total Dissolved TDS @ 180 C	373	mg/L		10		A2540 C	09/07/07 13:55 / kjw
INORGANICS							
Sulfate	117	mg/L		1		A4500-SO4 E	09/07/07 13:51 / abb
Alkalinity, Total as CaCO3	150	mg/L		1		A2320 B	09/06/07 14:57 / abb
Bicarbonate as HCO3	180	mg/L		1		A2320 B	09/06/07 14:57 / abb
Chloride	19	mg/L		1		A4500-Cl C	09/10/07 08:37 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/10/07 14:24 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 14:24 / eli-b
Calcium	46	mg/L		1		E200.7	09/10/07 22:10 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 14:24 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/10/07 22:10 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 14:24 / eli-b
Magnesium	11	mg/L		1		E200.7	09/10/07 22:10 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/10/07 14:24 / eli-b
Potassium	4	mg/L		1		E200.7	09/10/07 22:10 / eli-b
Selenium	0.036	mg/L		0.005		E200.8	09/10/07 14:24 / eli-b
Sodium	57	mg/L		1		E200.7	09/10/07 22:10 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/10/07 14:24 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090032-010
Client Sample ID: AEH-0709-115

Report Date: 09/20/07
Collection Date: 09/05/07 13:30
DateReceived: 09/05/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	5.9	s.u.		0.1		A4500-H B	09/06/07 11:55 / sld
Conductivity	11	umhos/cm		1		A2510 B	09/06/07 16:08 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/07/07 13:25 / kjw
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	09/07/07 13:56 / kjw
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/07/07 13:51 / abb
Alkalinity, Total as CaCO3	3	mg/L		1		A2320 B	09/06/07 14:58 / abb
Bicarbonate as HCO3	4	mg/L		1		A2320 B	09/06/07 14:58 / abb
Chloride	ND	mg/L		1		A4500-Cl C	09/10/07 08:38 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/10/07 19:21 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 19:21 / eli-b
Calcium	ND	mg/L		1		E200.7	09/10/07 22:14 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 19:21 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/10/07 22:14 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 19:21 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/10/07 22:14 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/10/07 19:21 / eli-b
Potassium	ND	mg/L		1		E200.7	09/10/07 22:14 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/10/07 19:21 / eli-b
Sodium	2	mg/L		1		E200.7	09/10/07 22:14 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/10/07 19:21 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090032-011
Client Sample ID: AEH-0709-116

Report Date: 09/20/07
Collection Date: 09/05/07 14:10
DateReceived: 09/05/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.4	s.u.		0.1		A4500-H B	09/06/07 11:58 / sld
Conductivity	746	umhos/cm		1		A2510 B	09/06/07 16:09 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/07/07 13:26 / kjw
Solids, Total Dissolved TDS @ 180 C	490	mg/L		10		A2540 C	09/07/07 13:57 / kjw
INORGANICS							
Sulfate	183	mg/L		1		A4500-SO4 E	09/07/07 13:52 / abb
Alkalinity, Total as CaCO3	170	mg/L		1		A2320 B	09/06/07 15:04 / abb
Bicarbonate as HCO3	210	mg/L		1		A2320 B	09/06/07 15:04 / abb
Chloride	25	mg/L		1		A4500-Cl C	09/10/07 08:56 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/10/07 14:32 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 14:32 / eli-b
Calcium	64	mg/L		1		E200.7	09/10/07 22:33 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 14:32 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/10/07 22:33 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 14:32 / eli-b
Magnesium	15	mg/L		1		E200.7	09/10/07 22:33 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/10/07 14:32 / eli-b
Potassium	4	mg/L		1		E200.7	09/10/07 22:33 / eli-b
Selenium	0.027	mg/L		0.005		E200.8	09/10/07 14:32 / eli-b
Sodium	65	mg/L		1		E200.7	09/10/07 22:33 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/10/07 14:32 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090032-012
Client Sample ID: AEH-0709-117

Report Date: 09/20/07
Collection Date: 09/05/07 15:20
DateReceived: 09/05/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.9	s.u.		0.1		A4500-H B	09/06/07 12:01 / sld
Conductivity	1680	umhos/cm		1		A2510 B	09/06/07 16:10 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/07/07 13:27 / kjw
Solids, Total Dissolved TDS @ 180 C	1320	mg/L		10		A2540 C	09/07/07 13:57 / kjw
INORGANICS							
Sulfate	648	mg/L	D	6		A4500-SO4 E	09/07/07 13:52 / abb
Alkalinity, Total as CaCO3	180	mg/L		1		A2320 B	09/06/07 15:08 / abb
Bicarbonate as HCO3	220	mg/L		1		A2320 B	09/06/07 15:08 / abb
Chloride	67	mg/L		1		A4500-Cl C	09/10/07 08:59 / sld
METALS, DISSOLVED							
Arsenic	0.006	mg/L		0.002		E200.8	09/10/07 14:40 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 14:40 / eli-b
Calcium	165	mg/L		1		E200.7	09/10/07 22:40 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 14:40 / eli-b
Iron	0.03	mg/L		0.02		E200.7	09/10/07 22:40 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 14:40 / eli-b
Magnesium	32	mg/L		1		E200.7	09/10/07 22:40 / eli-b
Manganese	2.37	mg/L		0.01		E200.8	09/10/07 14:40 / eli-b
Potassium	12	mg/L		1		E200.7	09/10/07 22:40 / eli-b
Selenium	0.086	mg/L		0.005		E200.8	09/10/07 14:40 / eli-b
Sodium	166	mg/L		1		E200.7	09/10/07 22:40 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/10/07 14:40 / eli-b

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D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090032-014
Client Sample ID: AEH-0709-118

Report Date: 09/20/07
Collection Date: 09/05/07 16:10
DateReceived: 09/05/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.9	s.u.		0.1		A4500-H B	09/06/07 12:04 / sld
Conductivity	1580	umhos/cm		1		A2510 B	09/06/07 16:12 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/07/07 13:29 / kjw
Solids, Total Dissolved TDS @ 180 C	1270	mg/L		10		A2540 C	09/07/07 13:59 / kjw
INORGANICS							
Sulfate	634	mg/L	D	6		A4500-SO4 E	09/07/07 13:53 / abb
Alkalinity, Total as CaCO3	170	mg/L		1		A2320 B	09/06/07 15:12 / abb
Bicarbonate as HCO3	200	mg/L		1		A2320 B	09/06/07 15:12 / abb
Chloride	57	mg/L		1		A4500-Cl C	09/10/07 09:01 / sld
METALS, DISSOLVED							
Arsenic	0.006	mg/L		0.002		E200.8	09/10/07 15:19 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/10/07 15:19 / eli-b
Calcium	188	mg/L		1		E200.7	09/10/07 22:44 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/10/07 15:19 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/10/07 22:44 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/10/07 15:19 / eli-b
Magnesium	37	mg/L		1		E200.7	09/10/07 22:44 / eli-b
Manganese	0.53	mg/L		0.01		E200.8	09/10/07 15:19 / eli-b
Potassium	10	mg/L		1		E200.7	09/10/07 22:44 / eli-b
Selenium	0.112	mg/L		0.005		E200.8	09/10/07 15:19 / eli-b
Sodium	120	mg/L		1		E200.7	09/10/07 22:44 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/10/07 15:19 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090032

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B								Analytical Run: TITTR_070906B	
Sample ID: CCV1_070906A	Continuing Calibration Verification Standard							09/06/07 14:13	
Alkalinity, Total as CaCO3	1000	mg/L	4.0	103	90	110			
Bicarbonate as HCO3	8.4	mg/L	4.0		0	0			
Method: A2320 B								Batch: 070906A-ALK-W	
Sample ID: MBLK1_070906A	Method Blank				Run: TITTR_070906B			09/06/07 13:08	
Alkalinity, Total as CaCO3	ND	mg/L	1						
Bicarbonate as HCO3	ND	mg/L	1						
Sample ID: LCS1_070906A	Laboratory Control Sample				Run: TITTR_070906B			09/06/07 13:12	
Alkalinity, Total as CaCO3	600	mg/L	4.0	100	90	110			
Sample ID: H07090010-007AMS	Sample Matrix Spike				Run: TITTR_070906B			09/06/07 13:46	
Alkalinity, Total as CaCO3	580	mg/L	4.0	96	90	110			
Sample ID: H07090010-007AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070906B			09/06/07 13:49	
Alkalinity, Total as CaCO3	570	mg/L	4.0	95	90	110	1.2	20	
Sample ID: H07090032-008BDUP	Sample Duplicate				Run: TITTR_070906B			09/06/07 14:53	
Alkalinity, Total as CaCO3	170	mg/L	4.0				1.2	20	
Bicarbonate as HCO3	200	mg/L	4.0				1.2	20	
Method: A2510 B								Batch: 070906A-COND-PROBE-W	
Sample ID: LCS1_070906A	Laboratory Control Sample				Run: COND_070906A			09/06/07 15:49	
Conductivity	731	umhos/cm	1.0	102	90	110			
Sample ID: H07090032-007BDUP	Sample Duplicate				Run: COND_070906A			09/06/07 16:03	
Conductivity	739	umhos/cm	1.0				0.2	10	
Method: A2540 C								Batch: 070907A-SLDS-TDS-W	
Sample ID: MBLK1_070907A	Method Blank				Run: SOLIDS_070907B			09/07/07 13:47	
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	1.0						
Sample ID: H07090032-003BMS	Sample Matrix Spike				Run: SOLIDS_070907B			09/07/07 13:51	
Solids, Total Dissolved TDS @ 180 C	1990	mg/L	10	100	80	120			
Sample ID: H07090032-012BDUP	Sample Duplicate				Run: SOLIDS_070907B			09/07/07 13:58	
Solids, Total Dissolved TDS @ 180 C	1320	mg/L	10				0.5	20	

Qualifiers:

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877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090032

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 D								Batch: 070907A-SLDS-TSS-W	
Sample ID: LCS1_070907A	Laboratory Control Sample				Run: SOLIDS_070907A			09/07/07 13:17	
Solids, Total Suspended TSS @ 105 C	1890	mg/L	10	95	70	130			
Sample ID: H07090032-012BDUP	Sample Duplicate				Run: SOLIDS_070907A			09/07/07 13:28	
Solids, Total Suspended TSS @ 105 C	4.00	mg/L	10				0.0	10	
Method: A4500-Cl C								Batch: 070906A-CL-TTR-W	
Sample ID: MBLK1_070906A	Method Blank				Run: TITTR_070906A			09/06/07 13:21	
Chloride	ND	mg/L	0.7						
Sample ID: LCS1_070906A	Laboratory Control Sample				Run: TITTR_070906A			09/06/07 13:23	
Chloride	110	mg/L	1.0	110	90	110			
Sample ID: H07090010-002AMS	Sample Matrix Spike				Run: TITTR_070906A			09/06/07 13:39	
Chloride	14.5	mg/L	1.0	100	90	110			
Sample ID: H07090010-002AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070906A			09/06/07 13:40	
Chloride	14.5	mg/L	1.0	100	90	110	0.0	20	
Method: A4500-Cl C								Batch: 070910A-CL-TTR-W	
Sample ID: MBLK1_070910A	Method Blank				Run: TITTR_070910A			09/10/07 08:25	
Chloride	ND	mg/L	0.7						
Sample ID: LCS1_070910A	Laboratory Control Sample				Run: TITTR_070910A			09/10/07 08:26	
Chloride	105	mg/L	1.0	105	90	110			
Sample ID: H07090032-010BMS	Sample Matrix Spike				Run: TITTR_070910A			09/10/07 08:40	
Chloride	10.5	mg/L	1.0	105	90	110			
Sample ID: H07090032-010BMSD	Sample Matrix Spike Duplicate				Run: TITTR_070910A			09/10/07 08:55	
Chloride	9.50	mg/L	1.0	95	90	110	10	20	
Sample ID: H07090052-001ADUP	Sample Duplicate				Run: TITTR_070910A			09/10/07 09:19	
Chloride	87.5	mg/L	1.0					20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090032

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Batch: 070906A-PH-W
Sample ID: LCS1_070906A	Laboratory Control Sample				Run: PH_070906A				09/06/07 10:55
pH	7.01	s.u.	0.10	100	98.6	101.4			
Sample ID: H07090032-002BDUP	Sample Duplicate				Run: PH_070906A				09/06/07 11:30
pH	7.22	s.u.	0.10				0.4	2	
Sample ID: H07090032-014BDUP	Sample Duplicate				Run: PH_070906A				09/06/07 12:04
pH	6.83	s.u.	0.10				0.4	2	
Method: A4500-SO4 E									Batch: 070907A-SO4-TURB-W
Sample ID: MBLK1_070907A	Method Blank				Run: TURBIDITY_070907A				09/07/07 13:43
Sulfate	ND	mg/L	0.6						
Sample ID: LCS1_070907A	Laboratory Control Sample				Run: TURBIDITY_070907A				09/07/07 13:44
Sulfate	99.9	mg/L	1.1	107	90	110			
Sample ID: H07090032-003BMS	Sample Matrix Spike				Run: TURBIDITY_070907A				09/07/07 13:47
Sulfate	19.4	mg/L	1.0	97	80	120			
Sample ID: H07090032-003BMSD	Sample Matrix Spike Duplicate				Run: TURBIDITY_070907A				09/07/07 13:47
Sulfate	20.9	mg/L	1.0	105	80	120	7.6	10	
Sample ID: H07090052-001ADUP	Sample Duplicate				Run: TURBIDITY_070907A				09/07/07 13:54
Sulfate	734	mg/L	5.6				2.2	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090032

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: SUB-B99163	
Sample ID: QCS	Initial Calibration Verification Standard							09/10/07 11:32	
Calcium	49.1	mg/L	1.0	98	90	110			
Iron	5.01	mg/L	0.030	100	90	110			
Magnesium	49.3	mg/L	1.0	99	90	110			
Potassium	48.7	mg/L	1.0	97	90	110			
Sodium	49.6	mg/L	1.0	99	90	110			
Method: E200.7								Batch: B_R99163	
Sample ID: MB-TJADIS070910A	Method Blank				Run: SUB-B99163			09/10/07 12:02	
Calcium	ND	mg/L	0.02						
Iron	ND	mg/L	0.005						
Magnesium	ND	mg/L	0.1						
Potassium	ND	mg/L	0.07						
Sodium	ND	mg/L	0.04						
Sample ID: LFB-TJADIS070910A	Laboratory Fortified Blank				Run: SUB-B99163			09/10/07 12:06	
Calcium	51.3	mg/L	1.0	103	85	115			
Iron	5.08	mg/L	0.030	102	85	115			
Magnesium	51.5	mg/L	1.0	103	85	115			
Potassium	51.0	mg/L	1.0	102	85	115			
Sodium	51.6	mg/L	1.0	103	85	115			
Sample ID: B07090525-002BMS2	Sample Matrix Spike				Run: SUB-B99163			09/10/07 21:25	
Calcium	176.8	mg/L	1.0	97	70	130			
Iron	9.812	mg/L	0.030	98	70	130			
Magnesium	151.5	mg/L	1.0	100	70	130			
Potassium	121.1	mg/L	1.0	101	70	130			
Sodium	311.6	mg/L	1.0	105	70	130			
Sample ID: B07090525-002BMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99163			09/10/07 21:29	
Calcium	177.7	mg/L	1.0	98	70	130	0.5	20	
Iron	10.15	mg/L	0.030	101	70	130	3.3	20	
Magnesium	153.5	mg/L	1.0	102	70	130	1.3	20	
Potassium	120.5	mg/L	1.0	101	70	130	0.5	20	
Sodium	304.5	mg/L	1.0	97	70	130	2.3	20	
Sample ID: H07090032-010A	Sample Matrix Spike				Run: SUB-B99163			09/10/07 22:18	
Calcium	48.62	mg/L	1.0	96	70	130			
Iron	4.920	mg/L	0.030	98	70	130			
Magnesium	48.24	mg/L	1.0	96	70	130			
Potassium	49.00	mg/L	1.0	98	70	130			
Sodium	51.41	mg/L	1.0	99	70	130			

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090032

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: B_R99163
Sample ID: H07090032-010A	Sample Matrix Spike				Run: SUB-B99163			09/10/07 22:18	
Sample ID: H07090032-010A	Sample Matrix Spike Duplicate				Run: SUB-B99163			09/10/07 22:22	
Calcium	48.16	mg/L	1.0	95	70	130	1.0	20	
Iron	4.905	mg/L	0.030	98	70	130	0.3	20	
Magnesium	48.09	mg/L	1.0	96	70	130	0.3	20	
Potassium	48.96	mg/L	1.0	98	70	130	0.1	20	
Sodium	50.77	mg/L	1.0	98	70	130	1.3	20	
Sample ID: B07090431-001CMS2	Sample Matrix Spike				Run: SUB-B99163			09/10/07 22:52	
Calcium	616.1	mg/L	1.1	94	70	130			
Iron	33.75	mg/L	0.040	95	70	130			
Magnesium	373.2	mg/L	1.0	98	70	130			
Potassium	254.6	mg/L	1.0	97	70	130			
Sodium	340.2	mg/L	1.0	94	70	130			
Sample ID: B07090431-001CMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99163			09/10/07 22:56	
Calcium	620.4	mg/L	1.1	96	70	130	0.7	20	
Iron	34.05	mg/L	0.040	97	70	130	0.9	20	
Magnesium	379.4	mg/L	1.0	100	70	130	1.7	20	
Potassium	259.4	mg/L	1.0	99	70	130	1.8	20	
Sodium	346.6	mg/L	1.0	96	70	130	1.9	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090032

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: SUB-B99112
Sample ID: QCS - ME070515A, ME0	Initial Calibration Verification Standard								09/10/07 10:46
Arsenic	0.050	mg/L	0.0050	100	90	110			
Cadmium	0.025	mg/L	0.0010	99	90	110			
Copper	0.048	mg/L	0.010	97	90	110			
Lead	0.050	mg/L	0.010	100	90	110			
Manganese	0.24	mg/L	0.010	97	90	110			
Selenium	0.049	mg/L	0.0050	97	90	110			
Zinc	0.050	mg/L	0.010	100	90	110			
Sample ID: QCS - ME070515A, ME0	Initial Calibration Verification Standard								09/10/07 20:54
Arsenic	0.051	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.048	mg/L	0.010	96	90	110			
Lead	0.050	mg/L	0.010	99	90	110			
Manganese	0.24	mg/L	0.010	97	90	110			
Selenium	0.050	mg/L	0.0050	99	90	110			
Zinc	0.050	mg/L	0.010	100	90	110			
Method: E200.8									Batch: B_R99112
Sample ID: LRB	Method Blank				Run: SUB-B99112				09/10/07 12:11
Arsenic	ND	mg/L	4E-05						
Cadmium	6E-05	mg/L	9E-06						
Copper	ND	mg/L	7E-05						
Lead	ND	mg/L	8E-06						
Manganese	ND	mg/L	5E-05						
Selenium	ND	mg/L	0.0001						
Zinc	0.0007	mg/L	3E-05						
Sample ID: LFB	Laboratory Fortified Blank				Run: SUB-B99112				09/10/07 12:18
Arsenic	0.051	mg/L	0.0050	102	85	115			
Cadmium	0.051	mg/L	0.0010	102	85	115			
Copper	0.051	mg/L	0.010	103	85	115			
Lead	0.051	mg/L	0.010	102	85	115			
Manganese	0.052	mg/L	0.010	103	85	115			
Selenium	0.051	mg/L	0.0050	102	85	115			
Zinc	0.053	mg/L	0.010	104	85	115			
Sample ID: H07090032-001A	Sample Matrix Spike				Run: SUB-B99112				09/10/07 12:41
Arsenic	0.2598	mg/L	0.0050	103	70	130			
Cadmium	0.2543	mg/L	0.0010	102	70	130			
Copper	0.2526	mg/L	0.010	100	70	130			
Lead	0.2556	mg/L	0.010	102	70	130			

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090032

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_R99112
Sample ID: H07090032-001A	Sample Matrix Spike				Run: SUB-B99112				09/10/07 12:41
Manganese	0.2556	mg/L	0.010	102	70	130			
Selenium	0.3961	mg/L	0.0050	102	70	130			
Zinc	0.2627	mg/L	0.010	101	70	130			
Sample ID: H07090032-001A	Sample Matrix Spike Duplicate				Run: SUB-B99112				09/10/07 12:49
Arsenic	0.2591	mg/L	0.0050	102	70	130	0.3	20	
Cadmium	0.2558	mg/L	0.0010	102	70	130	0.6	20	
Copper	0.2531	mg/L	0.010	101	70	130	0.2	20	
Lead	0.2544	mg/L	0.010	102	70	130	0.5	20	
Manganese	0.2611	mg/L	0.010	104	70	130	2.1	20	
Selenium	0.3935	mg/L	0.0050	101	70	130	0.6	20	
Zinc	0.2700	mg/L	0.010	104	70	130	2.7	20	
Sample ID: H07090032-014A	Sample Matrix Spike				Run: SUB-B99112				09/10/07 15:26
Arsenic	0.2670	mg/L	0.0050	105	70	130			
Cadmium	0.2572	mg/L	0.0010	103	70	130			
Copper	0.2567	mg/L	0.010	102	70	130			
Lead	0.2577	mg/L	0.010	103	70	130			
Manganese	0.7755	mg/L	0.010	99	70	130			
Selenium	0.3728	mg/L	0.0050	104	70	130			
Zinc	0.2673	mg/L	0.010	103	70	130			
Sample ID: H07090032-014A	Sample Matrix Spike Duplicate				Run: SUB-B99112				09/10/07 15:34
Arsenic	0.2710	mg/L	0.0050	106	70	130	1.5	20	
Cadmium	0.2580	mg/L	0.0010	103	70	130	0.3	20	
Copper	0.2581	mg/L	0.010	102	70	130	0.5	20	
Lead	0.2577	mg/L	0.010	103	70	130	0.0	20	
Manganese	0.7775	mg/L	0.010	99	70	130	0.3	20	
Selenium	0.3772	mg/L	0.0050	106	70	130	1.2	20	
Zinc	0.2707	mg/L	0.010	104	70	130	1.3	20	
Sample ID: B07090468-002AMS	Sample Matrix Spike				Run: SUB-B99112				09/10/07 16:31
Arsenic	0.2649	mg/L	0.0050		70	130			A
Cadmium	0.05136	mg/L	0.0010	101	70	130			
Copper	0.05249	mg/L	0.010	100	70	130			
Lead	0.05075	mg/L	0.010	101	70	130			
Manganese	0.05274	mg/L	0.010	104	70	130			
Selenium	0.05127	mg/L	0.0050	101	70	130			
Zinc	0.05499	mg/L	0.010	105	70	130			

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A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090032

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_R99112
Sample ID: B07090468-002AMSD	Sample Matrix Spike Duplicate				Run: SUB-B99112			09/10/07 17:10	
Arsenic	0.2676	mg/L	0.0050		70	130	1.0	20	A
Cadmium	0.05156	mg/L	0.0010	101	70	130	0.4	20	
Copper	0.05191	mg/L	0.010	99	70	130	1.1	20	
Lead	0.05103	mg/L	0.010	102	70	130	0.6	20	
Manganese	0.05107	mg/L	0.010	101	70	130	3.2	20	
Selenium	0.05183	mg/L	0.0050	102	70	130	1.1	20	
Zinc	0.05361	mg/L	0.010	102	70	130	2.5	20	

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TABLE B. 2007 RESIDENTIAL WELL AND EH-100 SERIES WELL SAMPLING ANALYTICAL PARAMETERS

Parameter	Analytical Technique	Analytical Method	Project Detection Limit (ppm)
Physical Parameters			
PH	PH Meter	SM 4500H-B	
Specific Conductivity	SC Meter	SM 2510 B	
TDS	Gravimetric	SM 2540C	10
TSS	Gravimetric	SM 2540D	10
Common Ions			
Alkalinity	Titrimetric	SM 2320B	1
Bicarbonate	Titrimetric	SM 2320B	1
Sulfate	Turbidimetric	SM 4500S04 E	1
Chloride	Colorimetric	SM 4500 CL C	1
Calcium	ICP	E200.7	5
Magnesium	ICP	E200.7	5
Sodium	ICP	E200.7	5
Potassium	ICP	E200.7	5
Arsenic and Metals			
Arsenic	ICP ICP-MS	200.7 200.8	0.005 (0.002 for residential samples)
Cadmium	ICP ICP-MS	200.7 200.8	0.001
Copper	ICP ICP-MS	200.7 200.8	0.004
Iron	ICP ICP-MS	200.7 200.8	0.020
Manganese	ICP ICP-MS	200.7 200.8	0.015
Lead	ICP ICP-MS	200.7 200.8	0.005
Selenium	ICP ICP-MS	200.7 200.8	0.005
Zinc	ICP ICP-MS	200.7 200.8	0.020
Field Parameters			
SWL	Electric Tape	HF-SOP-10	0.01 ft
Temperature	PH Meter	HF-SOP-20	NA
Dissolved Oxygen (DO)	DO Meter	HF-SOP-22	NA
PH	pH Meter	HF-SOP-20	NA
Specific Conductivity (SC)	SC Meter	HF-SOP-79	NA

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

September
~~August~~ 5, 2007

Energy Laboratories, Inc
Helena, MT 59601

RE: Asarco East Helena Bi-monthly Monitoring & Slurry Wall Groundwater Samples

Dear Energy Labs:

Enclosed are 14 ground water samples with identification codes AEH-0708-107 through -118, collected at the Asarco East Helena plant site on September 5, 2007. Samples should be analyzed for parameters per the chain-of-custody and following attached parameter list: Table B, Slurry Wall. Arsenic speciation samples need to be shipped priority overnight to your Casper lab to be analyzed within 30 hrs of sampling.

The data reports and invoices for analytical work should be directed to Bob Miller at Asarco Consulting, Inc. in Tacoma, Washington. Feel free to call (406-443-4150) Greg Bryce (x155) or myself (x144) if you have any questions about the samples.

Sincerely,

Juliann L Clum
Scientist

Enclosures

K:\PROJECT\1054\ 10708 labcoverGW.DOC

Energy Laboratories Inc
Workorder Receipt Checklist

Asarco Consulting

H07090032

Login completed by: Roxanne L. Tubbs

Reviewed by: [illegible]

Reviewed Date: 9/7/07

Date and Time Received: 9/5/2007 4:40 PM

Received by: rlt

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	15.0°C From Field
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 3161 East Lyndale Ave. • Helena, MT 59604
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ANALYTICAL SUMMARY REPORT

September 20, 2007

Asarco Consulting
5219 N Shirley Street
Ruston, WA 98407

Workorder No.: H07090052

Project Name: 1054 Asarco E. Helena

Energy Laboratories Inc received the following 13 samples from Asarco Consulting on 9/6/2007 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H07090052-001	AEH-0709-119	09/06/07 8:20	09/06/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity pH Solids, Total Dissolved Solids, Total Suspended Sulfate
H07090052-002	AEH-0709-120	09/06/07 9:35	09/06/07	Aqueous	Same As Above
H07090052-003	AEH-0709-121	09/06/07 9:45	09/06/07	Aqueous	Same As Above
H07090052-004	AEH-0709-122	09/06/07 10:20	09/06/07	Aqueous	Same As Above
H07090052-005	AEH-0709-123	09/06/07 11:00	09/06/07	Aqueous	Same As Above
H07090052-006	AEH-0709-124	09/06/07 11:30	09/06/07	Aqueous	Same As Above
H07090052-007	AEH-0709-125	09/06/07 11:55	09/06/07	Aqueous	Same As Above
H07090052-008	AEH-0709-126	09/06/07 13:30	09/06/07	Aqueous	Same As Above
H07090052-009	AEH-0709-127	09/06/07 13:55	09/06/07	Aqueous	Same As Above
H07090052-010	AEH-0709-128	09/06/07 14:25	09/06/07	Aqueous	Same As Above
H07090052-011	AEH-0709-129	09/06/07 14:40	09/06/07	Aqueous	Same As Above
H07090052-012	AEH-0709-130	09/06/07 15:05	09/06/07	Aqueous	Same As Above
H07090052-013	AEH-0709-131	09/06/07 16:00	09/06/07	Aqueous	Same As Above

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT, EPA # MT00005
eli-c - Energy Laboratories, Inc. - Casper, WY, EPA# WY00002
eli-f - Energy Laboratories, Inc. - Idaho Falls, ID, EPA # ID00942
eli-g - Energy Laboratories, Inc. - Gillette, WY, EPA# WY00006
eli-h - Energy Laboratories, Inc. - Helena, MT, EPA# MT00945
eli-r - Energy Laboratories, Inc. - Rapid City, SD, EPA# SD00012
eli-t - Energy Laboratories, Inc. - College Station, TX, EPA# TX01520

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES, INC. will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories are indicated within the Laboratory Analytical Report.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)

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Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

ELI appreciates the opportunity to provide you with this analytical service. For additional information, including certifications, and analytical services visit our web page www.energylab.com.

Report Approved By: _____

Jonathan Hager
Assistant Lab Manager

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CASE NARRATIVE

NONE

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-001
Client Sample ID: AEH-0709-119

Report Date: 09/19/07
Collection Date: 09/06/07 08:20
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.0	s.u.		0.1		A4500-H B	09/10/07 09:51 / abb
Conductivity	1690	umhos/cm		1		A2510 B	09/07/07 10:19 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/10/07 15:31 / kjw
Solids, Total Dissolved TDS @ 180 C	1560	mg/L		10		A2540 C	09/10/07 15:49 / kjw
INORGANICS							
Sulfate	750	mg/L	D	6		A4500-SO4 E	09/07/07 13:54 / abb
Alkalinity, Total as CaCO3	160	mg/L		1		A2320 B	09/10/07 14:25 / abb
Bicarbonate as HCO3	200	mg/L		1		A2320 B	09/10/07 14:25 / abb
Chloride	87	mg/L		1		A4500-Cl C	09/10/07 09:16 / sld
METALS, DISSOLVED							
Arsenic	0.008	mg/L		0.002		E200.8	09/15/07 13:27 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 13:27 / eli-b
Calcium	239	mg/L		1		E200.7	09/11/07 18:55 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 13:27 / eli-b
Iron	0.05	mg/L		0.02		E200.7	09/11/07 18:55 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 13:27 / eli-b
Magnesium	50	mg/L		1		E200.7	09/11/07 18:55 / eli-b
Manganese	0.13	mg/L		0.01		E200.7	09/11/07 18:55 / eli-b
Potassium	8	mg/L		1		E200.7	09/11/07 18:55 / eli-b
Selenium	0.180	mg/L		0.005		E200.8	09/15/07 13:27 / eli-b
Sodium	168	mg/L		1		E200.7	09/11/07 18:55 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/15/07 13:27 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-002
Client Sample ID: AEH-0709-120

Report Date: 09/19/07
Collection Date: 09/06/07 09:35
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.1	s.u.		0.1		A4500-H B	09/10/07 09:51 / abb
Conductivity	1330	umhos/cm		1		A2510 B	09/07/07 10:20 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/10/07 15:31 / kjw
Solids, Total Dissolved TDS @ 180 C	1130	mg/L		10		A2540 C	09/10/07 15:50 / kjw
INORGANICS							
Sulfate	632	mg/L	D	6		A4500-SO4 E	09/07/07 14:11 / abb
Alkalinity, Total as CaCO3	140	mg/L		1		A2320 B	09/10/07 14:32 / abb
Bicarbonate as HCO3	170	mg/L		1		A2320 B	09/10/07 14:32 / abb
Chloride	42	mg/L		1		A4500-Cl C	09/10/07 09:21 / sld
METALS, DISSOLVED							
Arsenic	0.006	mg/L		0.002		E200.8	09/15/07 13:35 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 13:35 / eli-b
Calcium	146	mg/L		1		E200.7	09/11/07 19:02 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 13:35 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/11/07 19:02 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 13:35 / eli-b
Magnesium	26	mg/L		1		E200.7	09/11/07 19:02 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/11/07 19:02 / eli-b
Potassium	31	mg/L		1		E200.7	09/11/07 19:02 / eli-b
Selenium	0.275	mg/L		0.005		E200.8	09/15/07 13:35 / eli-b
Sodium	153	mg/L		1		E200.7	09/11/07 19:02 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/11/07 19:02 / eli-b

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D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-003
Client Sample ID: AEH-0709-121

Report Date: 09/19/07
Collection Date: 09/06/07 09:45
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	09/10/07 09:53 / abb
Conductivity	1330	umhos/cm		1		A2510 B	09/07/07 10:21 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/10/07 15:32 / kjw
Solids, Total Dissolved TDS @ 180 C	1140	mg/L		10		A2540 C	09/10/07 15:50 / kjw
INORGANICS							
Sulfate	611	mg/L	D	6		A4500-SO4 E	09/07/07 14:11 / abb
Alkalinity, Total as CaCO3	140	mg/L		1		A2320 B	09/10/07 14:37 / abb
Bicarbonate as HCO3	170	mg/L		1		A2320 B	09/10/07 14:37 / abb
Chloride	37	mg/L		1		A4500-Cl C	09/10/07 09:23 / sld
METALS, DISSOLVED							
Arsenic	0.006	mg/L		0.002		E200.8	09/15/07 13:43 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 13:43 / eli-b
Calcium	144	mg/L		1		E200.7	09/11/07 19:06 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 13:43 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/11/07 19:06 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 13:43 / eli-b
Magnesium	26	mg/L		1		E200.7	09/11/07 19:06 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/11/07 19:06 / eli-b
Potassium	31	mg/L		1		E200.7	09/11/07 19:06 / eli-b
Selenium	0.271	mg/L		0.005		E200.8	09/15/07 13:43 / eli-b
Sodium	152	mg/L		1		E200.7	09/11/07 19:06 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/11/07 19:06 / eli-b

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D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-004
Client Sample ID: AEH-0709-122

Report Date: 09/19/07
Collection Date: 09/06/07 10:20
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.1	s.u.		0.1		A4500-H B	09/10/07 09:54 / abb
Conductivity	1940	umhos/cm		1		A2510 B	09/07/07 10:23 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/10/07 15:32 / kjw
Solids, Total Dissolved TDS @ 180 C	1840	mg/L		10		A2540 C	09/10/07 15:51 / kjw
INORGANICS							
Sulfate	918	mg/L	D	6		A4500-SO4 E	09/07/07 13:56 / abb
Alkalinity, Total as CaCO3	170	mg/L		1		A2320 B	09/10/07 14:42 / abb
Bicarbonate as HCO3	210	mg/L		1		A2320 B	09/10/07 14:42 / abb
Chloride	65	mg/L		1		A4500-Cl C	09/10/07 09:24 / sld
METALS, DISSOLVED							
Arsenic	0.008	mg/L		0.002		E200.8	09/15/07 13:50 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 13:50 / eli-b
Calcium	268	mg/L		1		E200.7	09/11/07 19:10 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 13:50 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/11/07 19:10 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 13:50 / eli-b
Magnesium	51	mg/L		1		E200.7	09/11/07 19:10 / eli-b
Manganese	0.02	mg/L		0.01		E200.7	09/11/07 19:10 / eli-b
Potassium	12	mg/L		1		E200.7	09/11/07 19:10 / eli-b
Selenium	0.432	mg/L		0.005		E200.8	09/15/07 13:50 / eli-b
Sodium	229	mg/L		1		E200.7	09/11/07 19:10 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/15/07 13:50 / eli-b

Report Definitions:
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D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-005
Client Sample ID: AEH-0709-123

Report Date: 09/19/07
Collection Date: 09/06/07 11:00
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	09/10/07 09:55 / abb
Conductivity	981	umhos/cm		1		A2510 B	09/07/07 10:24 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/10/07 15:33 / kjw
Solids, Total Dissolved TDS @ 180 C	762	mg/L		10		A2540 C	09/10/07 15:52 / kjw
INORGANICS							
Sulfate	309	mg/L	D	3		A4500-SO4 E	09/07/07 13:56 / abb
Alkalinity, Total as CaCO3	160	mg/L		1		A2320 B	09/10/07 14:45 / abb
Bicarbonate as HCO3	190	mg/L		1		A2320 B	09/10/07 14:45 / abb
Chloride	51	mg/L		1		A4500-Cl C	09/10/07 09:27 / sld
METALS, DISSOLVED							
Arsenic	0.004	mg/L		0.002		E200.8	09/15/07 13:58 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 13:58 / eli-b
Calcium	106	mg/L		1		E200.7	09/11/07 19:14 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 13:58 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/11/07 19:14 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 13:58 / eli-b
Magnesium	26	mg/L		1		E200.7	09/11/07 19:14 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/11/07 19:14 / eli-b
Potassium	6	mg/L		1		E200.7	09/11/07 19:14 / eli-b
Selenium	0.222	mg/L		0.005		E200.8	09/15/07 13:58 / eli-b
Sodium	103	mg/L		1		E200.7	09/11/07 19:14 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/11/07 19:14 / eli-b

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D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-006
Client Sample ID: AEH-0709-124

Report Date: 09/19/07
Collection Date: 09/06/07 11:30
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.8	s.u.		0.1		A4500-H B	09/10/07 09:57 / abb
Conductivity	1260	umhos/cm		1		A2510 B	09/07/07 10:25 / kjw
Solids, Total Suspended TSS @ 105 C	22	mg/L		10		A2540 D	09/10/07 15:34 / kjw
Solids, Total Dissolved TDS @ 180 C	1040	mg/L		10		A2540 C	09/10/07 15:53 / kjw
INORGANICS							
Sulfate	473	mg/L	D	3		A4500-SO4 E	09/07/07 13:57 / abb
Alkalinity, Total as CaCO3	150	mg/L		1		A2320 B	09/10/07 14:50 / abb
Bicarbonate as HCO3	180	mg/L		1		A2320 B	09/10/07 14:50 / abb
Chloride	72	mg/L		1		A4500-Cl C	09/10/07 09:33 / sld
METALS, DISSOLVED							
Arsenic	0.006	mg/L		0.002		E200.8	09/15/07 14:06 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 14:06 / eli-b
Calcium	88	mg/L		1		E200.7	09/11/07 19:17 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 14:06 / eli-b
Iron	0.03	mg/L		0.02		E200.7	09/11/07 19:17 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 14:06 / eli-b
Magnesium	20	mg/L		1		E200.7	09/11/07 19:17 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/11/07 19:17 / eli-b
Potassium	6	mg/L		1		E200.7	09/11/07 19:17 / eli-b
Selenium	0.220	mg/L		0.005		E200.8	09/15/07 14:06 / eli-b
Sodium	209	mg/L		1		E200.7	09/11/07 19:17 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/11/07 19:17 / eli-b

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D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-007
Client Sample ID: AEH-0709-125

Report Date: 09/19/07
Collection Date: 09/06/07 11:55
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.8	s.u.		0.1		A4500-H B	09/10/07 09:58 / abb
Conductivity	1430	umhos/cm		1		A2510 B	09/07/07 10:29 / kjw
Solids, Total Suspended TSS @ 105 C	11	mg/L		10		A2540 D	09/10/07 15:35 / kjw
Solids, Total Dissolved TDS @ 180 C	1250	mg/L		10		A2540 C	09/10/07 15:54 / kjw
INORGANICS							
Sulfate	533	mg/L	D	6		A4500-SO4 E	09/07/07 13:58 / abb
Alkalinity, Total as CaCO3	160	mg/L		1		A2320 B	09/10/07 15:02 / abb
Bicarbonate as HCO3	200	mg/L		1		A2320 B	09/10/07 15:02 / abb
Chloride	97	mg/L		1		A4500-Cl C	09/10/07 09:35 / sld
METALS, DISSOLVED							
Arsenic	0.007	mg/L		0.002		E200.8	09/15/07 14:13 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 14:13 / eli-b
Calcium	166	mg/L		1		E200.7	09/11/07 19:21 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 14:13 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/11/07 19:21 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 14:13 / eli-b
Magnesium	36	mg/L		1		E200.7	09/11/07 19:21 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/11/07 19:21 / eli-b
Potassium	6	mg/L		1		E200.7	09/11/07 19:21 / eli-b
Selenium	0.149	mg/L		0.005		E200.8	09/15/07 14:13 / eli-b
Sodium	181	mg/L		1		E200.7	09/11/07 19:21 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/11/07 19:21 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-008
Client Sample ID: AEH-0709-126

Report Date: 09/19/07
Collection Date: 09/06/07 13:30
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	5.2	s.u.		0.1		A4500-H B	09/10/07 10:05 / abb
Conductivity	7	umhos/cm		1		A2510 B	09/07/07 10:37 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/10/07 15:36 / kjw
Solids, Total Dissolved TDS @ 180 C	22	mg/L		10		A2540 C	09/10/07 15:54 / kjw
Samples H07090052-008A and H07090052-011A reanalyzed for TDS to confirm results - 9/20/2007 sld							
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/07/07 13:58 / abb
Alkalinity, Total as CaCO3	ND	mg/L		1		A2320 B	09/10/07 15:04 / abb
Bicarbonate as HCO3	ND	mg/L		1		A2320 B	09/10/07 15:04 / abb
Chloride	ND	mg/L		1		A4500-Cl C	09/10/07 09:39 / sld
METALS, DISSOLVED							
Arsenic	0.002	mg/L		0.002		E200.8	09/11/07 17:41 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/11/07 17:41 / eli-b
Calcium	ND	mg/L		1		E200.7	09/11/07 19:25 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/11/07 17:41 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/11/07 19:25 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/11/07 17:41 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/11/07 19:25 / eli-b
Manganese	ND	mg/L		0.01		E200.8	09/11/07 17:41 / eli-b
Potassium	ND	mg/L		1		E200.7	09/11/07 19:25 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/11/07 17:41 / eli-b
Sodium	ND	mg/L		1		E200.7	09/11/07 19:25 / eli-b
Zinc	ND	mg/L		0.01		E200.8	09/11/07 17:41 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-009
Client Sample ID: AEH-0709-127

Report Date: 09/19/07
Collection Date: 09/06/07 13:55
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.0	s.u.		0.1		A4500-H B	09/10/07 10:06 / abb
Conductivity	1280	umhos/cm		1		A2510 B	09/07/07 10:41 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/10/07 15:37 / kjw
Solids, Total Dissolved TDS @ 180 C	1030	mg/L		10		A2540 C	09/10/07 15:55 / kjw
INORGANICS							
Sulfate	449	mg/L	D	3		A4500-SO4 E	09/07/07 13:59 / abb
Alkalinity, Total as CaCO3	200	mg/L		1		A2320 B	09/10/07 15:24 / abb
Bicarbonate as HCO3	250	mg/L		1		A2320 B	09/10/07 15:24 / abb
Chloride	72	mg/L		1		A4500-Cl C	09/10/07 09:44 / sld
METALS, DISSOLVED							
Arsenic	0.006	mg/L		0.002		E200.8	09/15/07 15:15 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 15:15 / eli-b
Calcium	126	mg/L		1		E200.7	09/11/07 19:36 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 15:15 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/11/07 19:36 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 15:15 / eli-b
Magnesium	37	mg/L		1		E200.7	09/11/07 19:36 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/11/07 19:36 / eli-b
Potassium	6	mg/L		1		E200.7	09/11/07 19:36 / eli-b
Selenium	0.173	mg/L		0.005		E200.8	09/15/07 15:15 / eli-b
Sodium	150	mg/L		1		E200.7	09/11/07 19:36 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/11/07 19:36 / eli-b

Report Definitions:
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QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-010
Client Sample ID: AEH-0709-128

Report Date: 09/19/07
Collection Date: 09/06/07 14:25
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.9	s.u.		0.1		A4500-H B	09/10/07 10:07 / abb
Conductivity	1470	umhos/cm		1		A2510 B	09/07/07 10:42 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/10/07 15:37 / kjw
Solids, Total Dissolved TDS @ 180 C	1180	mg/L		10		A2540 C	09/10/07 15:55 / kjw
INORGANICS							
Sulfate	517	mg/L	D	6		A4500-SO4 E	09/07/07 13:59 / abb
Alkalinity, Total as CaCO3	200	mg/L		1		A2320 B	09/10/07 15:32 / abb
Bicarbonate as HCO3	250	mg/L		1		A2320 B	09/10/07 15:32 / abb
Chloride	85	mg/L		1		A4500-Cl C	09/10/07 09:47 / sld
METALS, DISSOLVED							
Arsenic	0.010	mg/L		0.002		E200.8	09/15/07 15:23 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 15:23 / eli-b
Calcium	107	mg/L		1		E200.7	09/11/07 19:40 / eli-b
Copper	0.006	mg/L		0.004		E200.8	09/15/07 15:23 / eli-b
Iron	0.04	mg/L		0.02		E200.7	09/11/07 19:40 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 15:23 / eli-b
Magnesium	27	mg/L		1		E200.7	09/11/07 19:40 / eli-b
Manganese	4.02	mg/L		0.01		E200.7	09/11/07 19:40 / eli-b
Potassium	10	mg/L		1		E200.7	09/11/07 19:40 / eli-b
Selenium	0.027	mg/L		0.005		E200.8	09/15/07 15:23 / eli-b
Sodium	217	mg/L		1		E200.7	09/11/07 19:40 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/11/07 19:40 / eli-b

Report Definitions:
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QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-011
Client Sample ID: AEH-0709-129

Report Date: 09/19/07
Collection Date: 09/06/07 14:40
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	5.0	s.u.		0.1		A4500-H B	09/10/07 10:10 / abb
Conductivity	8	umhos/cm		1		A2510 B	09/07/07 10:56 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/10/07 15:38 / kjw
Solids, Total Dissolved TDS @ 180 C	21	mg/L		10		A2540 C	09/10/07 15:56 / kjw
Samples H07090052-008A and H07090052-011A reanalyzed for TDS to confirm results - 9/20/2007 sld							
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/07/07 14:00 / abb
Alkalinity, Total as CaCO3	ND	mg/L		1		A2320 B	09/11/07 12:51 / abb
Bicarbonate as HCO3	ND	mg/L		1		A2320 B	09/11/07 12:51 / abb
Chloride	ND	mg/L		1		A4500-Cl C	09/10/07 09:48 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/15/07 15:31 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 15:31 / eli-b
Calcium	ND	mg/L		1		E200.7	09/11/07 19:51 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 15:31 / eli-b
Iron	0.03	mg/L		0.02		E200.7	09/11/07 19:51 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 15:31 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/11/07 19:51 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/11/07 19:51 / eli-b
Potassium	ND	mg/L		1		E200.7	09/11/07 19:51 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/15/07 15:31 / eli-b
Sodium	ND	mg/L		1		E200.7	09/11/07 19:51 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/11/07 19:51 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-012
Client Sample ID: AEH-0709-130

Report Date: 09/19/07
Collection Date: 09/06/07 15:05
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.8	s.u.		0.1		A4500-H B	09/10/07 10:14 / abb
Conductivity	1370	umhos/cm		1		A2510 B	09/07/07 10:50 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/10/07 15:40 / kjw
Solids, Total Dissolved TDS @ 180 C	1130	mg/L		10		A2540 C	09/10/07 15:57 / kjw
INORGANICS							
Sulfate	536	mg/L	D	6		A4500-SO4 E	09/07/07 14:12 / abb
Alkalinity, Total as CaCO3	150	mg/L		1		A2320 B	09/11/07 12:56 / abb
Bicarbonate as HCO3	180	mg/L		1		A2320 B	09/11/07 12:56 / abb
Chloride	85	mg/L		1		A4500-Cl C	09/10/07 09:51 / sld
METALS, DISSOLVED							
Arsenic	0.005	mg/L		0.002		E200.8	09/15/07 15:38 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 15:38 / eli-b
Calcium	119	mg/L		1		E200.7	09/11/07 19:55 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 15:38 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/11/07 19:55 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 15:38 / eli-b
Magnesium	27	mg/L		1		E200.7	09/11/07 19:55 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/11/07 19:55 / eli-b
Potassium	7	mg/L		1		E200.7	09/11/07 19:55 / eli-b
Selenium	0.044	mg/L		0.005		E200.8	09/15/07 15:38 / eli-b
Sodium	186	mg/L		1		E200.7	09/11/07 19:55 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/11/07 19:55 / eli-b

Report Definitions:
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QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090052-013
Client Sample ID: AEH-0709-131

Report Date: 09/19/07
Collection Date: 09/06/07 16:00
DateReceived: 09/06/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	09/10/07 10:15 / abb
Conductivity	328	umhos/cm		1		A2510 B	09/07/07 10:51 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/10/07 15:41 / kjw
Solids, Total Dissolved TDS @ 180 C	227	mg/L		10		A2540 C	09/10/07 15:58 / kjw
INORGANICS							
Sulfate	49	mg/L		1		A4500-SO4 E	09/07/07 14:02 / abb
Alkalinity, Total as CaCO3	100	mg/L		1		A2320 B	09/11/07 13:09 / abb
Bicarbonate as HCO3	120	mg/L		1		A2320 B	09/11/07 13:09 / abb
Chloride	5	mg/L		1		A4500-Cl C	09/10/07 09:52 / sld
METALS, DISSOLVED							
Arsenic	0.019	mg/L		0.002		E200.8	09/15/07 15:46 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 15:46 / eli-b
Calcium	28	mg/L		1		E200.7	09/11/07 19:59 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 15:46 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/11/07 19:59 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 15:46 / eli-b
Magnesium	5	mg/L		1		E200.7	09/11/07 19:59 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/11/07 19:59 / eli-b
Potassium	19	mg/L		1		E200.7	09/11/07 19:59 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/15/07 15:46 / eli-b
Sodium	26	mg/L		1		E200.7	09/11/07 19:59 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/11/07 19:59 / eli-b

Report Definitions:
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QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/19/07
Work Order: H07090052

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B								Batch: 070910A-ALK-W	
Sample ID: MBLK1_070910A	Method Blank				Run: TITTR_070910B			09/10/07 14:12	
Alkalinity, Total as CaCO3	ND	mg/L	1						
Bicarbonate as HCO3	ND	mg/L	1						
Sample ID: LCS1_070910A	Laboratory Control Sample				Run: TITTR_070910B			09/10/07 14:18	
Alkalinity, Total as CaCO3	600	mg/L	4.0	100	90	110			
Sample ID: H07090052-008AMS	Sample Matrix Spike				Run: TITTR_070910B			09/10/07 15:12	
Alkalinity, Total as CaCO3	590	mg/L	4.0	99	90	110			
Sample ID: H07090052-008AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070910B			09/10/07 15:16	
Alkalinity, Total as CaCO3	600	mg/L	4.0	100	90	110	1.8	20	
Method: A2320 B								*Batch: 070911A-ALK-W*	
Sample ID: MBLK1_070911A	Method Blank				Run: TITTR_070911A			09/11/07 12:43	
Alkalinity, Total as CaCO3	ND	mg/L	1						
Bicarbonate as HCO3	ND	mg/L	1						
Sample ID: LCS1_070911A	Laboratory Control Sample				Run: TITTR_070911A			09/11/07 12:47	
Alkalinity, Total as CaCO3	590	mg/L	4.0	99	90	110			
Sample ID: H07090052-012AMS	Sample Matrix Spike				Run: TITTR_070911A			09/11/07 13:00	
Alkalinity, Total as CaCO3	710	mg/L	4.0	93	90	110			
Sample ID: H07090052-012AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070911A			09/11/07 13:04	
Alkalinity, Total as CaCO3	720	mg/L	4.0	94	90	110	0.6	20	
Method: A2510 B								Batch: 070907A-COND-PROBE-W	
Sample ID: LCS1_070907A	Laboratory Control Sample				Run: COND_080907A			09/07/07 10:17	
Conductivity	721	umhos/cm	1.0	100	90	110			
Sample ID: H07090052-006ADUP	Sample Duplicate				Run: COND_080907A			09/07/07 10:28	
Conductivity	1260	umhos/cm	1.0				0.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/19/07
Work Order: H07090052

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C								Batch: 070910A-SLDS-TDS-W	
Sample ID: MBLK1_070910A	Method Blank				Run: SOLIDS_070910B			09/10/07 15:48	
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	1.0						
Sample ID: LCS1_070910A	Laboratory Control Sample				Run: SOLIDS_070910B			09/10/07 15:49	
Solids, Total Dissolved TDS @ 180 C	998	mg/L	10	100	90	110			
Sample ID: H07090052-011ADUP	Sample Duplicate				Run: SOLIDS_070910B			09/10/07 15:57	
Solids, Total Dissolved TDS @ 180 C	21.0	mg/L	10				0.0	20	
Sample ID: H07090063-001AMS	Sample Matrix Spike				Run: SOLIDS_070910B			09/10/07 16:02	
Solids, Total Dissolved TDS @ 180 C	3090	mg/L	10	99	80	120			
Sample ID: H07090063-001AMSD	Sample Matrix Spike Duplicate				Run: SOLIDS_070910B			09/10/07 16:02	
Solids, Total Dissolved TDS @ 180 C	3080	mg/L	10	99	80	120	0.1	10	
Method: A2540 D								Batch: 070910A-SLDS-TSS-W	
Sample ID: LCS1_070910A	Laboratory Control Sample				Run: SOLIDS_070910A			09/10/07 15:30	
Solids, Total Suspended TSS @ 105 C	1890	mg/L	10	95	70	130			
Sample ID: H07090052-011ADUP	Sample Duplicate				Run: SOLIDS_070910A			09/10/07 15:39	
Solids, Total Suspended TSS @ 105 C	ND	mg/L	10				0.0	10	
Method: A4500-Cl C								Batch: 070910A-CL-TTR-W	
Sample ID: MBLK1_070910A	Method Blank				Run: TITTR_070910A			09/10/07 08:25	
Chloride	ND	mg/L	0.7						
Sample ID: LCS1_070910A	Laboratory Control Sample				Run: TITTR_070910A			09/10/07 08:26	
Chloride	105	mg/L	1.0	105	90	110			
Sample ID: H07090052-001ADUP	Sample Duplicate				Run: TITTR_070910A			09/10/07 09:19	
Chloride	87.5	mg/L	1.0					20	
Sample ID: H07090052-008AMS	Sample Matrix Spike				Run: TITTR_070910A			09/10/07 09:39	
Chloride	10.5	mg/L	1.0	105	90	110			
Sample ID: H07090052-008AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070910A			09/10/07 09:42	
Chloride	10.5	mg/L	1.0	105	90	110		20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/19/07
Work Order: H07090052

Analyte		Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	**A4500-H B**									Batch: 070910A-PH-W
Sample ID:	**LCS1_070910A**	Laboratory Control Sample				Run: PH_070910A				09/10/07 09:49
pH		7.01	s.u.	0.10	100	98.6	101.4			
Sample ID:	**H07090052-011ADUP**	Sample Duplicate				Run: PH_070910A				09/10/07 10:11
pH		5.03	s.u.	0.10				0.2	2	
Method:	**A4500-SO4 E**									Batch: 070907A-SO4-TURB-W
Sample ID:	**MBLK1_070907A**	Method Blank				Run: TURBIDITY_070907A				09/07/07 13:43
Sulfate		ND	mg/L	0.6						
Sample ID:	**LCS1_070907A**	Laboratory Control Sample				Run: TURBIDITY_070907A				09/07/07 13:44
Sulfate		99.9	mg/L	1.1	107	90	110			
Sample ID:	**H07090032-003BMS**	Sample Matrix Spike				Run: TURBIDITY_070907A				09/07/07 13:47
Sulfate		19.4	mg/L	1.0	97	80	120			
Sample ID:	**H07090032-003BMSD**	Sample Matrix Spike Duplicate				Run: TURBIDITY_070907A				09/07/07 13:47
Sulfate		20.9	mg/L	1.0	105	80	120	7.6	10	
Sample ID:	**H07090052-001ADUP**	Sample Duplicate				Run: TURBIDITY_070907A				09/07/07 13:54
Sulfate		734	mg/L	5.6				2.2	20	
Sample ID:	**H07090052-011AMS**	Sample Matrix Spike				Run: TURBIDITY_070907A				09/07/07 14:00
Sulfate		18.3	mg/L	1.0	92	80	120			
Sample ID:	**H07090052-011AMSD**	Sample Matrix Spike Duplicate				Run: TURBIDITY_070907A				09/07/07 14:01
Sulfate		19.0	mg/L	1.0	95	80	120	3.6	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

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877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/19/07
Work Order: H07090052

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: SUB-B99229	
Sample ID: QCS	Initial Calibration Verification Standard							09/11/07 10:05	
Calcium	49.5	mg/L	1.0	99	90	110			
Iron	5.16	mg/L	0.030	103	90	110			
Magnesium	50.0	mg/L	1.0	100	90	110			
Potassium	49.8	mg/L	1.0	100	90	110			
Sodium	51.2	mg/L	1.0	102	90	110			
Method: E200.7								Batch: B_R99229	
Sample ID: MB-TJADIS070911A	Method Blank				Run: SUB-B99229			09/11/07 10:35	
Calcium	ND	mg/L	0.2						
Iron	ND	mg/L	0.005						
Magnesium	ND	mg/L	0.1						
Potassium	ND	mg/L	0.07						
Sodium	ND	mg/L	0.04						
Sample ID: LFB-TJADIS070911A	Laboratory Fortified Blank				Run: SUB-B99229			09/11/07 10:39	
Calcium	53.7	mg/L	1.0	107	85	115			
Iron	5.40	mg/L	0.030	108	85	115			
Magnesium	54.2	mg/L	1.0	108	85	115			
Potassium	54.4	mg/L	1.0	109	85	115			
Sodium	54.5	mg/L	1.0	109	85	115			
Sample ID: H07090052-010B	Sample Matrix Spike				Run: SUB-B99229			09/11/07 19:44	
Calcium	216.8	mg/L	1.0	110	70	130			
Iron	10.76	mg/L	0.030	107	70	130			
Magnesium	137.1	mg/L	1.0	110	70	130			
Potassium	112.9	mg/L	1.0	103	70	130			
Sodium	317.5	mg/L	1.0	100	70	130			
Sample ID: H07090052-010B	Sample Matrix Spike Duplicate				Run: SUB-B99229			09/11/07 19:47	
Calcium	210.9	mg/L	1.0	104	70	130	2.7	20	
Iron	10.33	mg/L	0.030	103	70	130	4.1	20	
Magnesium	133.3	mg/L	1.0	106	70	130	2.8	20	
Potassium	116.8	mg/L	1.0	107	70	130	3.5	20	
Sodium	328.9	mg/L	1.0	112	70	130	3.5	20	

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/19/07
Work Order: H07090052

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: SUB-B99223
Sample ID: QCS - ME070515A, ME0	Initial Calibration Verification Standard								09/12/07 00:30
Arsenic	0.051	mg/L	0.0050	102	90	110			
Cadmium	0.025	mg/L	0.0010	101	90	110			
Copper	0.049	mg/L	0.010	97	90	110			
Lead	0.050	mg/L	0.010	100	90	110			
Manganese	0.25	mg/L	0.010	101	90	110			
Selenium	0.050	mg/L	0.0050	100	90	110			
Zinc	0.051	mg/L	0.010	101	90	110			
Sample ID: QCS - ME070515A, ME0	Initial Calibration Verification Standard								09/11/07 12:55
Arsenic	0.051	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.048	mg/L	0.010	97	90	110			
Lead	0.051	mg/L	0.010	101	90	110			
Manganese	0.25	mg/L	0.010	99	90	110			
Selenium	0.050	mg/L	0.0050	99	90	110			
Zinc	0.050	mg/L	0.010	100	90	110			
Method: E200.8									Batch: B_R99223
Sample ID: LRB	Method Blank				Run: SUB-B99223				09/11/07 13:57
Arsenic	ND	mg/L	4E-05						
Cadmium	ND	mg/L	9E-06						
Copper	ND	mg/L	7E-05						
Lead	ND	mg/L	8E-06						
Manganese	ND	mg/L	5E-05						
Selenium	ND	mg/L	0.0001						
Zinc	0.0009	mg/L	3E-05						
Sample ID: LFB	Laboratory Fortified Blank				Run: SUB-B99223				09/11/07 14:05
Arsenic	0.050	mg/L	0.0050	101	85	115			
Cadmium	0.051	mg/L	0.0010	101	85	115			
Copper	0.051	mg/L	0.010	102	85	115			
Lead	0.051	mg/L	0.010	103	85	115			
Manganese	0.050	mg/L	0.010	101	85	115			
Selenium	0.051	mg/L	0.0050	102	85	115			
Zinc	0.051	mg/L	0.010	101	85	115			
Sample ID: B07090693-001CMS	Sample Matrix Spike				Run: SUB-B99223				09/11/07 17:56
Arsenic	0.2652	mg/L	0.0050	106	70	130			
Cadmium	0.2571	mg/L	0.0010	102	70	130			
Copper	0.2524	mg/L	0.010	99	70	130			
Lead	0.2641	mg/L	0.010	104	70	130			

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/19/07
Work Order: H07090052

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_R99223
Sample ID: B07090693-001CMS	Sample Matrix Spike				Run: SUB-B99223				09/11/07 17:56
Manganese	0.2596	mg/L	0.010	101	70	130			
Selenium	0.2746	mg/L	0.0050	110	70	130			
Zinc	0.2753	mg/L	0.010	102	70	130			
Sample ID: B07090693-001CMSD	Sample Matrix Spike Duplicate				Run: SUB-B99223				09/11/07 18:04
Arsenic	0.2662	mg/L	0.0050	106	70	130	0.4	20	
Cadmium	0.2601	mg/L	0.0010	104	70	130	1.2	20	
Copper	0.2535	mg/L	0.010	100	70	130	0.4	20	
Lead	0.2652	mg/L	0.010	104	70	130	0.4	20	
Manganese	0.2610	mg/L	0.010	102	70	130	0.5	20	
Selenium	0.2753	mg/L	0.0050	110	70	130	0.2	20	
Zinc	0.2744	mg/L	0.010	101	70	130	0.3	20	

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/19/07
Work Order: H07090052

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: SUB-B99426
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard									09/14/07 12:21
Arsenic	0.051	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	99	90	110			
Copper	0.048	mg/L	0.010	96	90	110			
Lead	0.050	mg/L	0.010	99	90	110			
Selenium	0.050	mg/L	0.0050	100	90	110			
Zinc	0.050	mg/L	0.010	99	90	110			
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard									09/14/07 23:42
Arsenic	0.050	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.048	mg/L	0.010	96	90	110			
Lead	0.050	mg/L	0.010	100	90	110			
Selenium	0.050	mg/L	0.0050	101	90	110			
Zinc	0.049	mg/L	0.010	99	90	110			
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard									09/15/07 12:25
Arsenic	0.051	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.049	mg/L	0.010	98	90	110			
Lead	0.050	mg/L	0.010	101	90	110			
Selenium	0.050	mg/L	0.0050	99	90	110			
Zinc	0.050	mg/L	0.010	100	90	110			
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard									09/16/07 03:22
Arsenic	0.051	mg/L	0.0050	102	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.048	mg/L	0.010	97	90	110			
Lead	0.051	mg/L	0.010	101	90	110			
Selenium	0.050	mg/L	0.0050	100	90	110			
Zinc	0.050	mg/L	0.010	99	90	110			
Method: E200.8									Batch: B_R99426
Sample ID: LRB Method Blank				Run: SUB-B99426					09/14/07 13:25
Arsenic	ND	mg/L	4E-05						
Cadmium	3E-05	mg/L	9E-06						
Copper	ND	mg/L	7E-05						
Lead	2E-05	mg/L	8E-06						
Selenium	ND	mg/L	0.0001						
Zinc	0.001	mg/L	3E-05						

Qualifiers:

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ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/19/07
Work Order: H07090052

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_R99426
Sample ID: LFB	Laboratory Fortified Blank				Run: SUB-B99426				09/14/07 13:32
Arsenic	0.051	mg/L	0.0050	101	85	115			
Cadmium	0.050	mg/L	0.0010	100	85	115			
Copper	0.052	mg/L	0.010	103	85	115			
Lead	0.051	mg/L	0.010	101	85	115			
Selenium	0.050	mg/L	0.0050	101	85	115			
Zinc	0.052	mg/L	0.010	102	85	115			
Sample ID: B07091055-003BMS	Sample Matrix Spike				Run: SUB-B99426				09/16/07 00:47
Arsenic	0.1976	mg/L	0.0050	100	70	130			
Cadmium	0.05324	mg/L	0.0010	100	70	130			
Copper	0.05257	mg/L	0.010	95	70	130			
Lead	0.05332	mg/L	0.010	106	70	130			
Selenium	0.05309	mg/L	0.0050	105	70	130			
Zinc	2.096	mg/L	0.010		70	130			A
Sample ID: B07091055-003BMSD	Sample Matrix Spike Duplicate				Run: SUB-B99426				09/16/07 00:55
Arsenic	0.1980	mg/L	0.0050	101	70	130	0.2	20	
Cadmium	0.05338	mg/L	0.0010	100	70	130	0.3	20	
Copper	0.05318	mg/L	0.010	96	70	130	1.2	20	
Lead	0.05318	mg/L	0.010	106	70	130	0.3	20	
Selenium	0.05298	mg/L	0.0050	105	70	130	0.2	20	
Zinc	2.075	mg/L	0.010		70	130	1.0	20	A
Sample ID: H07090052-007B	Sample Matrix Spike				Run: SUB-B99426				09/15/07 14:52
Arsenic	0.2649	mg/L	0.0050	103	70	130			
Cadmium	0.2523	mg/L	0.0010	101	70	130			
Copper	0.2504	mg/L	0.010	99	70	130			
Lead	0.2571	mg/L	0.010	103	70	130			
Selenium	0.4017	mg/L	0.0050	101	70	130			
Zinc	0.2575	mg/L	0.010	100	70	130			
Sample ID: H07090052-007B	Sample Matrix Spike Duplicate				Run: SUB-B99426				09/15/07 15:00
Arsenic	0.2643	mg/L	0.0050	103	70	130	0.2	20	
Cadmium	0.2528	mg/L	0.0010	101	70	130	0.1	20	
Copper	0.2489	mg/L	0.010	99	70	130	0.6	20	
Lead	0.2532	mg/L	0.010	101	70	130	1.5	20	
Selenium	0.4039	mg/L	0.0050	102	70	130	0.5	20	
Zinc	0.2599	mg/L	0.010	101	70	130	0.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Energy Laboratories Inc
Workorder Receipt Checklist

H07090052

Asarco Consulting

Login completed by: Roxanne L. Tubbs

Reviewed by: tbs SOH

Reviewed Date: 9/7/07

Date and Time Received: 9/6/2007 4:50 PM

Received by: rlt

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	13.5°C From Field
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

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877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

ANALYTICAL SUMMARY REPORT

September 20, 2007

Asarco Consulting
5219 N Shirley Street
Ruston, WA 98407

Workorder No.: H07090102

Project Name: 1054 Asarco E. Helena

Energy Laboratories Inc received the following 9 samples from Asarco Consulting on 9/11/2007 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H07090102-001	AEH-0709-132	09/11/07 9:25	09/11/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity pH Solids, Total Dissolved Solids, Total Suspended Sulfate
H07090102-002	AEH-0709-133	09/11/07 10:00	09/11/07	Aqueous	Same As Above
H07090102-003	AEH-0709-134	09/11/07 12:00	09/11/07	Aqueous	Same As Above
H07090102-004	AEH-0709-135	09/11/07 11:30	09/11/07	Aqueous	Same As Above
H07090102-005	AEH-0709-136	09/11/07 12:05	09/11/07	Aqueous	Same As Above
H07090102-006	AEH-0709-137	09/11/07 14:45	09/11/07	Aqueous	Same As Above
H07090102-007	AEH-0709-138	09/11/07 15:00	09/11/07	Aqueous	Same As Above
H07090102-008	AEH-0709-139	09/11/07 15:30	09/11/07	Aqueous	Same As Above
H07090102-009	AEH-0709-140	09/11/07 16:00	09/11/07	Aqueous	Same As Above

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT, EPA # MT00005
eli-c - Energy Laboratories, Inc. - Casper, WY, EPA# WY00002
eli-f - Energy Laboratories, Inc. - Idaho Falls, ID, EPA # ID00942
eli-g - Energy Laboratories, Inc. - Gillette, WY, EPA# WY00006
eli-h - Energy Laboratories, Inc. - Helena, MT, EPA# MT00945
eli-r - Energy Laboratories, Inc. - Rapid City, SD, EPA# SD00012
eli-t - Energy Laboratories, Inc. - College Station, TX, EPA# TX01520

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES, INC. will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories are indicated within the Laboratory Analytical Report.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

ELI appreciates the opportunity to provide you with this analytical service. For additional information, including certifications, and analytical services visit our web page www.energylab.com.

ENERGY LABORATORIES
877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

Report Approved By: _____
Jonathan Hager
Assistant Lab Manager

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877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

LABORATORY ANALYTICAL REPORT

Client:	Asarco Consulting	Report Date:	09/20/07
Project:	1054 Asarco E. Helena	Collection Date:	09/11/07 09:25
Lab ID:	H07090102-001	DateReceived:	09/11/07
Client Sample ID:	AEH-0709-132	Matrix:	Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	09/12/07 12:47 / abb
Conductivity	548	umhos/cm		1		A2510 B	09/12/07 12:06 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/13/07 15:12 / abb
Solids, Total Dissolved TDS @ 180 C	406	mg/L		10		A2540 C	09/13/07 15:04 / abb
INORGANICS							
Sulfate	64	mg/L		1		A4500-SO4 E	09/17/07 14:39 / abb
Alkalinity, Total as CaCO3	260	mg/L		1		A2320 B	09/17/07 10:03 / kjw
Bicarbonate as HCO3	320	mg/L		1		A2320 B	09/17/07 10:03 / kjw
Chloride	9	mg/L		1		A4500-Cl C	09/18/07 12:08 / sld
METALS, DISSOLVED							
Arsenic	0.011	mg/L		0.002		E200.8	09/15/07 22:13 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 22:13 / eli-b
Calcium	81	mg/L		1		E200.7	09/14/07 16:33 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 22:13 / eli-b
Iron	0.04	mg/L		0.02		E200.7	09/14/07 16:33 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 22:13 / eli-b
Magnesium	18	mg/L		1		E200.7	09/14/07 16:33 / eli-b
Manganese	0.03	mg/L		0.01		E200.7	09/14/07 16:33 / eli-b
Potassium	6	mg/L		1		E200.7	09/14/07 16:33 / eli-b
Selenium	0.006	mg/L		0.005		E200.8	09/15/07 22:13 / eli-b
Sodium	24	mg/L		1		E200.7	09/14/07 16:33 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/14/07 16:33 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client:	Asarco Consulting	Report Date:	09/20/07
Project:	1054 Asarco E. Helena	Collection Date:	09/11/07 10:00
Lab ID:	H07090102-002	DateReceived:	09/11/07
Client Sample ID:	AEH-0709-133	Matrix:	Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.9	s.u.		0.1		A4500-H B	09/12/07 12:49 / abb
Conductivity	212	umhos/cm		1		A2510 B	09/12/07 12:09 / abb
Solids, Total Suspended TSS @ 105 C	135	mg/L		10		A2540 D	09/13/07 15:13 / abb
Solids, Total Dissolved TDS @ 180 C	177	mg/L		10		A2540 C	09/13/07 15:04 / abb
INORGANICS							
Sulfate	23	mg/L		1		A4500-SO4 E	09/17/07 14:40 / abb
Alkalinity, Total as CaCO3	110	mg/L		1		A2320 B	09/17/07 10:14 / kjw
Bicarbonate as HCO3	130	mg/L		1		A2320 B	09/17/07 10:14 / kjw
Chloride	3	mg/L		1		A4500-Cl C	09/18/07 12:09 / sld
METALS, DISSOLVED							
Arsenic	0.017	mg/L		0.002		E200.8	09/15/07 22:20 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 22:20 / eli-b
Calcium	18	mg/L		1		E200.7	09/14/07 16:37 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 22:20 / eli-b
Iron	0.04	mg/L		0.02		E200.7	09/14/07 16:37 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 22:20 / eli-b
Magnesium	5	mg/L		1		E200.7	09/14/07 16:37 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/14/07 16:37 / eli-b
Potassium	5	mg/L		1		E200.7	09/14/07 16:37 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/15/07 22:20 / eli-b
Sodium	21	mg/L		1		E200.7	09/14/07 16:37 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/14/07 16:37 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090102-003
Client Sample ID: AEH-0709-134

Report Date: 09/20/07
Collection Date: 09/11/07 12:00
DateReceived: 09/11/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.3	s.u.		0.1		A4500-H B	09/12/07 12:50 / abb
Conductivity	475	umhos/cm		1		A2510 B	09/12/07 12:09 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/13/07 15:13 / abb
Solids, Total Dissolved TDS @ 180 C	347	mg/L		10		A2540 C	09/13/07 15:05 / abb
INORGANICS							
Sulfate	75	mg/L		1		A4500-SO4 E	09/17/07 14:40 / abb
Alkalinity, Total as CaCO3	190	mg/L		1		A2320 B	09/17/07 10:25 / kjw
Bicarbonate as HCO3	230	mg/L		1		A2320 B	09/17/07 10:25 / kjw
Chloride	15	mg/L		1		A4500-Cl C	09/18/07 12:11 / sld
METALS, DISSOLVED							
Arsenic	0.009	mg/L		0.002		E200.8	09/15/07 22:28 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 22:28 / eli-b
Calcium	64	mg/L		1		E200.7	09/14/07 16:40 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 22:28 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/14/07 16:40 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 22:28 / eli-b
Magnesium	14	mg/L		1		E200.7	09/14/07 16:40 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/14/07 16:40 / eli-b
Potassium	5	mg/L		1		E200.7	09/14/07 16:40 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/15/07 22:28 / eli-b
Sodium	23	mg/L		1		E200.7	09/14/07 16:40 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/14/07 16:40 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client:	Asarco Consulting	Report Date:	09/20/07
Project:	1054 Asarco E. Helena	Collection Date:	09/11/07 11:30
Lab ID:	H07090102-004	DateReceived:	09/11/07
Client Sample ID:	AEH-0709-135	Matrix:	Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	4.9	s.u.		0.1		A4500-H B	09/12/07 12:51 / abb
Conductivity	13	umhos/cm		1		A2510 B	09/12/07 12:10 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/13/07 15:14 / abb
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	09/13/07 15:05 / abb
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/17/07 14:41 / abb
Alkalinity, Total as CaCO3	3	mg/L		1		A2320 B	09/17/07 10:29 / kjw
Bicarbonate as HCO3	4	mg/L		1		A2320 B	09/17/07 10:29 / kjw
Chloride	ND	mg/L		1		A4500-Cl C	09/18/07 12:11 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/15/07 22:59 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 22:59 / eli-b
Calcium	ND	mg/L		1		E200.7	09/14/07 16:44 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 22:59 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/14/07 16:44 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 22:59 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/14/07 16:44 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/14/07 16:44 / eli-b
Potassium	ND	mg/L		1		E200.7	09/14/07 16:44 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/15/07 22:59 / eli-b
Sodium	2	mg/L		1		E200.7	09/14/07 16:44 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/14/07 16:44 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client:	Asarco Consulting	Report Date:	09/20/07
Project:	1054 Asarco E. Helena	Collection Date:	09/11/07 12:05
Lab ID:	H07090102-005	DateReceived:	09/11/07
Client Sample ID:	AEH-0709-136	Matrix:	Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.2	s.u.		0.1		A4500-H B	09/12/07 12:54 / abb
Conductivity	482	umhos/cm		1		A2510 B	09/12/07 12:11 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/13/07 15:14 / abb
Solids, Total Dissolved TDS @ 180 C	349	mg/L		10		A2540 C	09/13/07 15:05 / abb
INORGANICS							
Sulfate	78	mg/L		1		A4500-SO4 E	09/17/07 14:43 / abb
Alkalinity, Total as CaCO3	180	mg/L		1		A2320 B	09/17/07 11:13 / kjw
Bicarbonate as HCO3	220	mg/L		1		A2320 B	09/17/07 11:13 / kjw
Chloride	15	mg/L		1		A4500-Cl C	09/18/07 12:14 / sld
METALS, DISSOLVED							
Arsenic	0.009	mg/L		0.002		E200.8	09/15/07 23:07 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 23:07 / eli-b
Calcium	64	mg/L		1		E200.7	09/14/07 16:48 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 23:07 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/14/07 16:48 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 23:07 / eli-b
Magnesium	14	mg/L		1		E200.7	09/14/07 16:48 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/14/07 16:48 / eli-b
Potassium	5	mg/L		1		E200.7	09/14/07 16:48 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/15/07 23:07 / eli-b
Sodium	23	mg/L		1		E200.7	09/14/07 16:48 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/14/07 16:48 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client:	Asarco Consulting	Report Date:	09/20/07
Project:	1054 Asarco E. Helena	Collection Date:	09/11/07 14:45
Lab ID:	H07090102-006	DateReceived;	09/11/07
Client Sample ID:	AEH-0709-137	Matrix:	Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.9	s.u.		0.1		A4500-H B	09/12/07 12:55 / abb
Conductivity	1490	umhos/cm		1		A2510 B	09/12/07 12:12 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/13/07 15:15 / abb
Solids, Total Dissolved TDS @ 180 C	1230	mg/L		10		A2540 C	09/13/07 15:07 / abb
INORGANICS							
Sulfate	501	mg/L	D	6		A4500-SO4 E	09/17/07 14:43 / abb
Alkalinity, Total as CaCO3	240	mg/L		1		A2320 B	09/17/07 11:23 / kjw
Bicarbonate as HCO3	300	mg/L		1		A2320 B	09/17/07 11:23 / kjw
Chloride	122	mg/L		1		A4500-Cl C	09/18/07 12:15 / sld
METALS, DISSOLVED							
Arsenic	0.123	mg/L		0.002		E200.8	09/15/07 23:14 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 23:14 / eli-b
Calcium	163	mg/L		1		E200.7	09/14/07 16:59 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 23:14 / eli-b
Iron	0.03	mg/L		0.02		E200.7	09/14/07 16:59 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 23:14 / eli-b
Magnesium	43	mg/L		1		E200.7	09/14/07 16:59 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/14/07 16:59 / eli-b
Potassium	7	mg/L		1		E200.7	09/14/07 16:59 / eli-b
Selenium	0.162	mg/L		0.005		E200.8	09/15/07 23:14 / eli-b
Sodium	171	mg/L		1		E200.7	09/14/07 16:59 / eli-b
Zinc	0.01	mg/L		0.01		E200.7	09/14/07 16:59 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client:	Asarco Consulting	Report Date:	09/20/07
Project:	1054 Asarco E. Helena	Collection Date:	09/11/07 15:00
Lab ID:	H07090102-007	DateReceived:	09/11/07
Client Sample ID:	AEH-0709-138	Matrix:	Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	5.3	s.u.		0.1		A4500-H B	09/12/07 12:58 / abb
Conductivity	7	umhos/cm		1		A2510 B	09/12/07 12:13 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/13/07 15:15 / abb
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	09/13/07 15:07 / abb
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/17/07 14:43 / abb
Alkalinity, Total as CaCO3	3	mg/L		1		A2320 B	09/17/07 11:26 / kjw
Bicarbonate as HCO3	4	mg/L		1		A2320 B	09/17/07 11:26 / kjw
Chloride	ND	mg/L		1		A4500-Cl C	09/18/07 12:17 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/15/07 23:53 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/15/07 23:53 / eli-b
Calcium	ND	mg/L		1		E200.7	09/14/07 17:10 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/15/07 23:53 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/14/07 17:10 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/15/07 23:53 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/14/07 17:10 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/14/07 17:10 / eli-b
Potassium	ND	mg/L		1		E200.7	09/14/07 17:10 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/15/07 23:53 / eli-b
Sodium	ND	mg/L		1		E200.7	09/14/07 17:10 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/14/07 17:10 / eli-b

Report Definitions:
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QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090102-008
Client Sample ID: AEH-0709-139

Report Date: 09/20/07
Collection Date: 09/11/07 15:30
DateReceived: 09/11/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.0	s.u.		0.1		A4500-H B	09/12/07 13:00 / abb
Conductivity	1820	umhos/cm		1		A2510 B	09/12/07 12:13 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/13/07 15:15 / abb
Solids, Total Dissolved TDS @ 180 C	1630	mg/L		10		A2540 C	09/13/07 15:08 / abb
INORGANICS							
Sulfate	836	mg/L	D	6		A4500-SO4 E	09/17/07 14:44 / abb
Alkalinity, Total as CaCO3	190	mg/L		1		A2320 B	09/17/07 11:35 / kjw
Bicarbonate as HCO3	230	mg/L		1		A2320 B	09/17/07 11:35 / kjw
Chloride	62	mg/L		1		A4500-Cl C	09/18/07 12:22 / sld
METALS, DISSOLVED							
Arsenic	0.275	mg/L		0.002		E200.8	09/16/07 00:01 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/16/07 00:01 / eli-b
Calcium	203	mg/L		1		E200.7	09/14/07 17:14 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/16/07 00:01 / eli-b
Iron	0.04	mg/L		0.02		E200.7	09/14/07 17:14 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/16/07 00:01 / eli-b
Magnesium	36	mg/L		1		E200.7	09/14/07 17:14 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/14/07 17:14 / eli-b
Potassium	51	mg/L		1		E200.7	09/14/07 17:14 / eli-b
Selenium	0.448	mg/L		0.005		E200.8	09/16/07 00:01 / eli-b
Sodium	229	mg/L		1		E200.7	09/14/07 17:14 / eli-b
Zinc	0.01	mg/L		0.01		E200.7	09/14/07 17:14 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090102-009
Client Sample ID: AEH-0709-140

Report Date: 09/20/07
Collection Date: 09/11/07 16:00
DateReceived: 09/11/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.0	s.u.		0.1		A4500-H B	09/12/07 13:01 / abb
Conductivity	618	umhos/cm		1		A2510 B	09/12/07 12:14 / abb
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/13/07 15:16 / abb
Solids, Total Dissolved TDS @ 180 C	459	mg/L		10		A2540 C	09/13/07 15:08 / abb
INORGANICS							
Sulfate	169	mg/L		1		A4500-SO4 E	09/17/07 14:45 / abb
Alkalinity, Total as CaCO3	140	mg/L		1		A2320 B	09/17/07 12:06 / kjw
Bicarbonate as HCO3	170	mg/L		1		A2320 B	09/17/07 12:06 / kjw
Chloride	10	mg/L		1		A4500-Cl C	09/18/07 12:24 / sld
METALS, DISSOLVED							
Arsenic	0.384	mg/L		0.002		E200.8	09/16/07 00:09 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/16/07 00:09 / eli-b
Calcium	46	mg/L		1		E200.7	09/14/07 17:18 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/16/07 00:09 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/14/07 17:18 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/16/07 00:09 / eli-b
Magnesium	8	mg/L		1		E200.7	09/14/07 17:18 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/14/07 17:18 / eli-b
Potassium	46	mg/L		1		E200.7	09/14/07 17:18 / eli-b
Selenium	0.029	mg/L		0.005		E200.8	09/16/07 00:09 / eli-b
Sodium	57	mg/L		1		E200.7	09/14/07 17:18 / eli-b
Zinc	0.01	mg/L		0.01		E200.7	09/14/07 17:18 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090102

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B								Analytical Run: TITTR_070907A	
Sample ID: CCV1_070917A	Continuing Calibration Verification Standard							09/17/07 11:57	
Alkalinity, Total as CaCO3	1100	mg/L	4.0	110	90	110			
Bicarbonate as HCO3	20	mg/L	4.0		0	0			
Method: A2320 B								Batch: 070917A-ALK-W	
Sample ID: MBLK1_070917A	Method Blank				Run: TITTR_070907A			09/17/07 09:19	
Alkalinity, Total as CaCO3	ND	mg/L	1						
Bicarbonate as HCO3	ND	mg/L	1						
Sample ID: LCS1_070917A	Laboratory Control Sample				Run: TITTR_070907A			09/17/07 09:32	
Alkalinity, Total as CaCO3	630	mg/L	4.0	105	90	110			
Sample ID: H07090102-004AMS	Sample Matrix Spike				Run: TITTR_070907A			09/17/07 11:03	
Alkalinity, Total as CaCO3	620	mg/L	4.0	103	90	110			
Sample ID: H07090102-004AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070907A			09/17/07 11:07	
Alkalinity, Total as CaCO3	620	mg/L	4.0	102	90	110	0.6	20	
Sample ID: H07090115-002ADUP	Sample Duplicate				Run: TITTR_070907A			09/17/07 12:39	
Alkalinity, Total as CaCO3	2.0	mg/L	4.0				0.0	20	
Bicarbonate as HCO3	2.4	mg/L	4.0				0.0	20	
Method: A2510 B								Batch: 070912A-COND-PROBE-W	
Sample ID: LCS1_070912A	Laboratory Control Sample				Run: COND_070912A			09/12/07 11:55	
Conductivity	721	umhos/cm	1.0	101	90	110			
Sample ID: H07090102-005ADUP	Sample Duplicate				Run: COND_070912A			09/12/07 12:11	
Conductivity	482	umhos/cm	1.0				0.1	10	
Method: A2540 C								Batch: 070913A-SLDS-TDS-W	
Sample ID: MBLK1_070913A	Method Blank				Run: SOLIDS_070913C			09/13/07 15:01	
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	1.0						
Sample ID: H07090098-002ADUP	Sample Duplicate				Run: SOLIDS_070913C			09/13/07 15:03	
Solids, Total Dissolved TDS @ 180 C	1600	mg/L	10				1.2	20	

Qualifiers:

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ND - Not detected at the reporting limit.

ENERGY LABORATORIES
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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090102

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 D								Batch: 070913A-SLDS-TSS-W	
Sample ID: LCS1_070913A	Laboratory Control Sample				Run: SOLIDS_070913A			09/13/07 15:10	
Solids, Total Suspended TSS @ 105 C	1970	mg/L	10	99	70	130			
Sample ID: H07090102-003ADUP	Sample Duplicate				Run: SOLIDS_070913A			09/13/07 15:13	
Solids, Total Suspended TSS @ 105 C	ND	mg/L	10				0.0	10	
Method: A4500-Cl C								Batch: 070918A-CL-TTR-W	
Sample ID: MBLK1_070918A	Method Blank				Run: TITTR_070918A			09/18/07 11:41	
Chloride	ND	mg/L	0.7						
Sample ID: LCS1_070918A	Laboratory Control Sample				Run: TITTR_070918A			09/18/07 11:42	
Chloride	105	mg/L	1.0	105	90	110			
Sample ID: H07090102-007AMS	Sample Matrix Spike				Run: TITTR_070918A			09/18/07 12:19	
Chloride	10.5	mg/L	1.0	105	90	110			
Sample ID: H07090102-007AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070918A			09/18/07 12:21	
Chloride	9.50	mg/L	1.0	95	90	110	10	20	
Method: A4500-H B								Batch: 070912A-PH-W	
Sample ID: LCS1_070912A	Laboratory Control Sample				Run: PH_070912A			09/12/07 12:35	
pH	6.98	s.u.	0.10	100	98.6	101.4			
Sample ID: H07090102-005ADUP	Sample Duplicate				Run: PH_070912A			09/12/07 12:55	
pH	7.13	s.u.	0.10				0.3	2	
Method: A4500-SO4 E								Batch: 070917A-SO4-TURB-W	
Sample ID: MBLK1_070917A	Method Blank				Run: TURBIDITY_070917A			09/17/07 14:36	
Sulfate	ND	mg/L	0.6						
Sample ID: LCS1_070917A	Laboratory Control Sample				Run: TURBIDITY_070917A			09/17/07 14:37	
Sulfate	101	mg/L	1.1	101	90	110			
Sample ID: H07090102-004AMS	Sample Matrix Spike				Run: TURBIDITY_070917A			09/17/07 14:41	
Sulfate	18.7	mg/L	1.0	94	80	120			
Sample ID: H07090102-004AMSD	Sample Matrix Spike Duplicate				Run: TURBIDITY_070917A			09/17/07 14:42	
Sulfate	18.8	mg/L	1.0	94	80	120	0.5	10	
Sample ID: H07090102-008ADUP	Sample Duplicate				Run: TURBIDITY_070917A			09/17/07 14:44	
Sulfate	884	mg/L	5.6				5.6	20	

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090102

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: SUB-B99402	
Sample ID: QCS	Initial Calibration Verification Standard							09/14/07 13:29	
Calcium	48.2	mg/L	1.0	96	90	110			
Iron	4.85	mg/L	0.030	97	90	110			
Magnesium	47.9	mg/L	1.0	96	90	110			
Manganese	4.76	mg/L	0.010	95	90	110			
Potassium	47.9	mg/L	1.0	96	90	110			
Sodium	49.7	mg/L	1.0	99	90	110			
Zinc	0.985	mg/L	0.010	98	90	110			
Method: E200.7								Batch: B_R99402	
Sample ID: MB-TJADIS070914A	Method Blank				Run: SUB-B99402			09/14/07 13:59	
Calcium	ND	mg/L	0.02						
Iron	ND	mg/L	0.005						
Magnesium	ND	mg/L	0.1						
Manganese	ND	mg/L	0.001						
Potassium	ND	mg/L	0.07						
Sodium	ND	mg/L	0.04						
Zinc	ND	mg/L	0.001						
Sample ID: LFB-TJADIS070914A	Laboratory Fortified Blank				Run: SUB-B99402			09/14/07 14:03	
Calcium	49.3	mg/L	1.0	99	85	115			
Iron	4.92	mg/L	0.030	98	85	115			
Magnesium	49.5	mg/L	1.0	99	85	115			
Manganese	4.88	mg/L	0.010	98	85	115			
Potassium	48.7	mg/L	1.0	97	85	115			
Sodium	51.1	mg/L	1.0	102	85	115			
Zinc	1.00	mg/L	0.010	100	85	115			
Sample ID: H07090082-001C	Sample Matrix Spike				Run: SUB-B99402			09/15/07 02:40	
Calcium	100	mg/L	1.0	98	70	130			
Iron	5.0	mg/L	0.030	99	70	130			
Magnesium	59	mg/L	1.0	100	70	130			
Manganese	4.8	mg/L	0.010	96	70	130			
Potassium	54	mg/L	1.0	101	70	130			
Sodium	92	mg/L	1.0	97	70	130			
Zinc	1.0	mg/L	0.010	100	70	130			
Sample ID: H07090082-001C	Sample Matrix Spike Duplicate				Run: SUB-B99402			09/15/07 02:44	
Calcium	100	mg/L	1.0	96	70	130	0.8	20	
Iron	5.0	mg/L	0.030	99	70	130	0.6	20	
Magnesium	59	mg/L	1.0	99	70	130	0.8	20	
Manganese	4.8	mg/L	0.010	95	70	130	0.9	20	

Qualifiers:

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877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090102

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Batch: B_R99402	
Sample ID: H07090082-001C	Sample Matrix Spike Duplicate				Run: SUB-B99402			09/15/07 02.44	
Potassium	54	mg/L	1.0	102	70	130	0.4	20	
Sodium	93	mg/L	1.0	98	70	130	1.0	20	
Zinc	1.0	mg/L	0.010	99	70	130	0.7	20	
Sample ID: H07090102-006B	Sample Matrix Spike				Run: SUB-B99402			09/14/07 17:03	
Calcium	262.0	mg/L	1.0	99	70	130			
Iron	10.07	mg/L	0.030	100	70	130			
Magnesium	148.1	mg/L	1.0	105	70	130			
Manganese	10.33	mg/L	0.010	103	70	130			
Potassium	111.8	mg/L	1.0	104	70	130			
Sodium	280.1	mg/L	1.0	109	70	130			
Zinc	2.115	mg/L	0.010	105	70	130			
Sample ID: H07090102-006B	Sample Matrix Spike Duplicate				Run: SUB-B99402			09/14/07 17:07	
Calcium	262.2	mg/L	1.0	99	70	130	0.1	20	
Iron	9.983	mg/L	0.030	100	70	130	0.8	20	
Magnesium	148.0	mg/L	1.0	105	70	130	0.1	20	
Manganese	10.15	mg/L	0.010	102	70	130	1.7	20	
Potassium	110.1	mg/L	1.0	103	70	130	1.5	20	
Sodium	280.0	mg/L	1.0	109	70	130	0.0	20	
Zinc	2.082	mg/L	0.010	103	70	130	1.6	20	

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090102

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: SUB-B99426
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard									09/14/07 12:21
Arsenic	0.051	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	99	90	110			
Copper	0.048	mg/L	0.010	96	90	110			
Lead	0.050	mg/L	0.010	99	90	110			
Selenium	0.050	mg/L	0.0050	100	90	110			
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard									09/14/07 23:42
Arsenic	0.050	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.048	mg/L	0.010	96	90	110			
Lead	0.050	mg/L	0.010	100	90	110			
Selenium	0.050	mg/L	0.0050	101	90	110			
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard									09/15/07 12:25
Arsenic	0.051	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.049	mg/L	0.010	98	90	110			
Lead	0.050	mg/L	0.010	101	90	110			
Selenium	0.050	mg/L	0.0050	99	90	110			
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard									09/16/07 03:22
Arsenic	0.051	mg/L	0.0050	102	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.048	mg/L	0.010	97	90	110			
Lead	0.051	mg/L	0.010	101	90	110			
Selenium	0.050	mg/L	0.0050	100	90	110			
Method: E200.8									Batch: B_R99426
Sample ID: LRB Method Blank				Run: SUB-B99426					09/14/07 13:25
Arsenic	ND	mg/L	4E-05						
Cadmium	3E-05	mg/L	9E-06						
Copper	ND	mg/L	7E-05						
Lead	2E-05	mg/L	8E-06						
Selenium	ND	mg/L	0.0001						
Sample ID: LFB Laboratory Fortified Blank				Run: SUB-B99426					09/14/07 13:32
Arsenic	0.051	mg/L	0.0050	101	85	115			
Cadmium	0.050	mg/L	0.0010	100	85	115			
Copper	0.052	mg/L	0.010	103	85	115			
Lead	0.051	mg/L	0.010	101	85	115			
Selenium	0.050	mg/L	0.0050	101	85	115			

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090102

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Batch: B_R99426	
Sample ID: LFB	Laboratory Fortified Blank				Run: SUB-B99426			09/14/07 13:32	
Sample ID: B07090899-001AMS	Sample Matrix Spike				Run: SUB-B99426			09/15/07 17:11	
Arsenic	0.05268	mg/L	0.0050	105	70	130			
Cadmium	0.05710	mg/L	0.0010	101	70	130			
Copper	0.06287	mg/L	0.010	100	70	130			
Lead	0.05110	mg/L	0.010	102	70	130			
Selenium	0.05357	mg/L	0.0050	106	70	130			
Sample ID: B07090899-001AMSD	Sample Matrix Spike Duplicate				Run: SUB-B99426			09/15/07 17:19	
Arsenic	0.05326	mg/L	0.0050	106	70	130	1.1	20	
Cadmium	0.05805	mg/L	0.0010	103	70	130	1.7	20	
Copper	0.06335	mg/L	0.010	101	70	130	0.8	20	
Lead	0.05161	mg/L	0.010	103	70	130	1.0	20	
Selenium	0.05431	mg/L	0.0050	107	70	130	1.4	20	
Sample ID: H07090102-003B	Sample Matrix Spike				Run: SUB-B99426			09/15/07 22:36	
Arsenic	0.2723	mg/L	0.0050	105	70	130			
Cadmium	0.2559	mg/L	0.0010	102	70	130			
Copper	0.2566	mg/L	0.010	102	70	130			
Lead	0.2602	mg/L	0.010	104	70	130			
Selenium	0.2666	mg/L	0.0050	106	70	130			
Sample ID: H07090102-003B	Sample Matrix Spike Duplicate				Run: SUB-B99426			09/15/07 22:44	
Arsenic	0.2682	mg/L	0.0050	104	70	130	1.5	20	
Cadmium	0.2542	mg/L	0.0010	102	70	130	0.6	20	
Copper	0.2497	mg/L	0.010	100	70	130	2.7	20	
Lead	0.2564	mg/L	0.010	103	70	130	1.5	20	
Selenium	0.2612	mg/L	0.0050	104	70	130	2.1	20	
Sample ID: B07091055-003BMS	Sample Matrix Spike				Run: SUB-B99426			09/16/07 00:47	
Arsenic	0.1976	mg/L	0.0050	100	70	130			
Cadmium	0.05324	mg/L	0.0010	100	70	130			
Copper	0.05257	mg/L	0.010	95	70	130			
Lead	0.05332	mg/L	0.010	106	70	130			
Selenium	0.05309	mg/L	0.0050	105	70	130			
Sample ID: B07091055-003BMSD	Sample Matrix Spike Duplicate				Run: SUB-B99426			09/16/07 00:55	
Arsenic	0.1980	mg/L	0.0050	101	70	130	0.2	20	
Cadmium	0.05338	mg/L	0.0010	100	70	130	0.3	20	
Copper	0.05318	mg/L	0.010	96	70	130	1.2	20	
Lead	0.05318	mg/L	0.010	106	70	130	0.3	20	
Selenium	0.05298	mg/L	0.0050	105	70	130	0.2	20	

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 09/20/07
Work Order: H07090102

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_R99426
Sample ID: B07091055-003BMSD	Sample Matrix Spike Duplicate				Run: SUB-B99426				09/16/07 00:55

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

TABLE B. 2007 RESIDENTIAL WELL AND EH-100 SERIES WELL SAMPLING ANALYTICAL PARAMETERS

Parameter	Analytical Technique	Analytical Method	Project Detection Limit (ppm)
Physical Parameters			
PH	PH Meter	SM 4500H-B	
Specific Conductivity	SC Meter	SM 2510 B	
TDS	Gravimetric	SM 2540C	10
TSS	Gravimetric	SM 2540D	10
Common Ions			
Alkalinity	Titrimetric	SM 2320B	1
Bicarbonate	Titrimetric	SM 2320B	1
Sulfate	Turbidimetric	SM 4500S04 E	1
Chloride	Colorimetric	SM 4500 CL C	1
Calcium	ICP	E200.7	5
Magnesium	ICP	E200.7	5
Sodium	ICP	E200.7	5
Potassium	ICP	E200.7	5
Arsenic and Metals			
Arsenic	ICP ICP-MS	200.7 200.8	0.005 (0.002 for residential samples)
Cadmium	ICP ICP-MS	200.7 200.8	0.001
Copper	ICP ICP-MS	200.7 200.8	0.004
Iron	ICP ICP-MS	200.7 200.8	0.020
Manganese	ICP ICP-MS	200.7 200.8	0.015
Lead	ICP ICP-MS	200.7 200.8	0.005
Selenium	ICP ICP-MS	200.7 200.8	0.005
Zinc	ICP ICP-MS	200.7 200.8	0.020
Field Parameters			
SWL	Electric Tape	HF-SOP-10	0.01 ft
Temperature	PH Meter	HF-SOP-20	NA
Dissolved Oxygen (DO)	DO Meter	HF-SOP-22	NA
PH	pH Meter	HF-SOP-20	NA
Specific Conductivity (SC)	SC Meter	HF-SOP-79	NA

Energy Laboratories Inc
Workorder Receipt Checklist

H07090102

Asarco Consulting

Login completed by: Roxanne L. Tubbs

Reviewed by: Amanda Blackburn JOA

Reviewed Date: 9/12/2007 8:50:22 AM

Date and Time Received: 9/12/2007 8:43 AM

Received by: rlt

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	14.0°C From Field
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 3161 East Lyndale Ave. • Helena, MT 59604
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ANALYTICAL SUMMARY REPORT

October 01, 2007

Asarco Consulting
5219 N Shirley Street
Ruston, WA 98407

Workorder No.: H07090115

Project Name: 1054 Asarco E. Helena

Energy Laboratories Inc received the following 12 samples from Asarco Consulting on 9/12/2007 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H07090115-001	AEH-0709-141	09/12/07 8:50	09/12/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity pH Solids, Total Dissolved Solids, Total Suspended Sulfate
H07090115-002	AEH-0709-142	09/12/07 9:10	09/12/07	Aqueous	Same As Above
H07090115-003	AEH-0709-143	09/12/07 9:25	09/12/07	Aqueous	Same As Above
H07090115-004	AEH-0709-144	09/12/07 10:40	09/12/07	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Chloride Conductivity Arsenic Speciation Metals by ICP, Dissolved pH Metals Digestion by EPA 200.2 Solids, Total Dissolved Solids, Total Suspended Sulfate
H07090115-005	AEH-0709-145	09/12/07 11:15	09/12/07	Aqueous	Same As Above
H07090115-006	AEH-0709-146	09/12/07 11:40	09/12/07	Aqueous	Same As Above
H07090115-007	AEH-0709-147	09/12/07 13:10	09/12/07	Aqueous	Same As Above
H07090115-008	AEH-0709-148	09/12/07 13:40	09/12/07	Aqueous	Same As Above
H07090115-009	AEH-0709-149	09/12/07 14:15	09/12/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity pH Solids, Total Dissolved Solids, Total Suspended Sulfate
H07090115-010	AEH-0709-150	09/12/07 14:30	09/12/07	Aqueous	Same As Above
H07090115-011	AEH-0709-151	09/12/07 15:10	09/12/07	Aqueous	Same As Above

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H07090115-012 AEH-0709-152	09/12/07 15:00 09/12/07	Aqueous	Same As Above	

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT, EPA # MT00005
eli-c - Energy Laboratories, Inc. - Casper, WY, EPA# WY00002
eli-f - Energy Laboratories, Inc. - Idaho Falls, ID, EPA # ID00942
eli-g - Energy Laboratories, Inc. - Gillette, WY, EPA# WY00006
eli-h - Energy Laboratories, Inc. - Helena, MT, EPA# MT00945
eli-r - Energy Laboratories, Inc. - Rapid City, SD, EPA# SD00012
eli-t - Energy Laboratories, Inc. - College Station, TX, EPA# TX01520

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES, INC. will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories are indicated within the Laboratory Analytical Report.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

ELI appreciates the opportunity to provide you with this analytical service. For additional information, including certifications, and analytical services visit our web page www.energylab.com.

Report Approved By: Jonathan Hager
Jonathan Hager
Assistant Lab Manager

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CASE NARRATIVE

NONE

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 3161 East Lyndale Ave. • Helena, MT 59604
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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-001
Client Sample ID: AEH-0709-141

Report Date: 10/01/07
Collection Date: 09/12/07 08:50
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.5	s.u.		0.1		A4500-H B	09/14/07 12:40 / sld
Conductivity	1120	umhos/cm		1		A2510 B	09/14/07 15:39 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:20 / abb
Solids, Total Dissolved TDS @ 180 C	768	mg/L		10		A2540 C	09/18/07 13:05 / abb
INORGANICS							
Sulfate	364	mg/L	D	3		A4500-SO4 E	09/17/07 14:45 / abb
Alkalinity, Total as CaCO3	160	mg/L		1		A2320 B	09/17/07 12:35 / kjw
Bicarbonate as HCO3	200	mg/L		1		A2320 B	09/17/07 12:35 / kjw
Chloride	15	mg/L		1		A4500-Cl C	09/18/07 12:27 / sld
METALS, DISSOLVED							
Arsenic	1.444	mg/L		0.002		E200.8	09/19/07 21:32 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/19/07 21:32 / eli-b
Calcium	44	mg/L		1		E200.7	09/18/07 12:42 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/18/07 12:42 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/18/07 12:42 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/19/07 21:32 / eli-b
Magnesium	7	mg/L		1		E200.7	09/18/07 12:42 / eli-b
Manganese	0.04	mg/L		0.01		E200.7	09/18/07 12:42 / eli-b
Potassium	90	mg/L		1		E200.7	09/18/07 12:42 / eli-b
Selenium	0.061	mg/L		0.005		E200.8	09/19/07 21:32 / eli-b
Sodium	152	mg/L		1		E200.7	09/18/07 12:42 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/18/07 12:42 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-002
Client Sample ID: AEH-0709-142

Report Date: 10/01/07
Collection Date: 09/12/07 09:10
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	4.9	s.u.		0.1		A4500-H B	09/14/07 12:42 / sld
Conductivity	8	umhos/cm		1		A2510 B	09/14/07 15:42 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:21 / abb
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	09/18/07 13:05 / abb
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/17/07 14:46 / abb
Alkalinity, Total as CaCO3	2	mg/L		1		A2320 B	09/17/07 12:37 / kjw
Bicarbonate as HCO3	2	mg/L		1		A2320 B	09/17/07 12:37 / kjw
Chloride	ND	mg/L		1		A4500-Cl C	09/18/07 12:28 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/19/07 22:34 / eli-b
Cadmium	ND	mg/L		0.001		E200.7	09/18/07 12:53 / eli-b
Calcium	ND	mg/L		1		E200.7	09/18/07 12:53 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/18/07 12:53 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/18/07 12:53 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/19/07 22:34 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/18/07 12:53 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/18/07 12:53 / eli-b
Potassium	ND	mg/L		1		E200.7	09/18/07 12:53 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/19/07 22:34 / eli-b
Sodium	ND	mg/L		1		E200.7	09/18/07 12:53 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/18/07 12:53 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-003
Client Sample ID: AEH-0709-143

Report Date: 10/01/07
Collection Date: 09/12/07 09:25
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.1	s.u.		0.1		A4500-H B	09/14/07 12:44 / sld
Conductivity	1080	umhos/cm		1		A2510 B	09/14/07 15:43 / kjw
Solids, Total Suspended TSS @ 105 C	32	mg/L		10		A2540 D	09/18/07 13:21 / abb
Solids, Total Dissolved TDS @ 180 C	756	mg/L		10		A2540 C	09/18/07 13:05 / abb
INORGANICS							
Sulfate	342	mg/L	D	3		A4500-SO4 E	09/17/07 14:46 / abb
Alkalinity, Total as CaCO3	170	mg/L		1		A2320 B	09/17/07 12:47 / kjw
Bicarbonate as HCO3	210	mg/L		1		A2320 B	09/17/07 12:47 / kjw
Chloride	21	mg/L		1		A4500-Cl C	09/18/07 12:37 / sld
METALS, DISSOLVED							
Arsenic	2.002	mg/L		0.002		E200.8	09/19/07 22:41 / eli-b
Cadmium	ND	mg/L		0.001		E200.7	09/18/07 13:00 / eli-b
Calcium	68	mg/L		1		E200.7	09/18/07 13:00 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/18/07 13:00 / eli-b
Iron	0.02	mg/L		0.02		E200.7	09/18/07 13:00 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/19/07 22:41 / eli-b
Magnesium	10	mg/L		1		E200.7	09/18/07 13:00 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/18/07 13:00 / eli-b
Potassium	25	mg/L		1		E200.7	09/18/07 13:00 / eli-b
Selenium	0.072	mg/L		0.005		E200.8	09/19/07 22:41 / eli-b
Sodium	*157*	*mg/L*		1		E200.7	09/18/07 13:00 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/18/07 13:00 / eli-b

Report Definitions:
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QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-004
Client Sample ID: AEH-0709-144

Report Date: 10/01/07
Collection Date: 09/12/07 10:40
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.8	s.u.		0.1		A4500-H B	09/14/07 12:45 / sld
Conductivity	1780	umhos/cm		1		A2510 B	09/14/07 15:43 / kjw
Solids, Total Suspended TSS @ 105 C	65	mg/L		10		A2540 D	09/18/07 13:22 / abb
Solids, Total Dissolved TDS @ 180 C	1120	mg/L		10		A2540 C	09/18/07 13:05 / abb
INORGANICS							
Sulfate	30	mg/L		1		A4500-SO4 E	09/17/07 15:01 / abb
Alkalinity, Total as CaCO3	850	mg/L		1		A2320 B	09/17/07 12:57 / kjw
Bicarbonate as HCO3	1000	mg/L		1		A2320 B	09/17/07 12:57 / kjw
Chloride	157	mg/L		1		A4500-Cl C	09/18/07 12:41 / sld
METALS, DISSOLVED							
Arsenic	0.549	mg/L		0.002		E200.8	09/21/07 21:34 / eli-b
Cadmium	ND	mg/L		0.001		E200.7	09/18/07 13:04 / eli-b
Calcium	168	mg/L		1		E200.7	09/18/07 13:04 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/18/07 13:04 / eli-b
Iron	19.66	mg/L		0.02		E200.7	09/18/07 13:04 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/19/07 22:49 / eli-b
Magnesium	41	mg/L		1		E200.7	09/18/07 13:04 / eli-b
Manganese	3.88	mg/L		0.01		E200.7	09/18/07 13:04 / eli-b
Potassium	15	mg/L		1		E200.7	09/18/07 13:04 / eli-b
Sodium	180	mg/L		1		E200.7	09/18/07 13:04 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/18/07 13:04 / eli-b
METALS, TOTAL							
Arsenic	0.550	mg/L		0.002		E200.8	09/19/07 17:48 / eli-b
Cadmium	0.003	mg/L		0.001		E200.8	09/19/07 17:48 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/19/07 17:48 / eli-b
Iron	17.2	mg/L	D	0.02		E200.7	09/17/07 19:31 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/19/07 17:48 / eli-b
Manganese	3.58	mg/L		0.01		E200.7	09/17/07 19:31 / eli-b
Zinc	0.03	mg/L		0.01		E200.7	09/17/07 19:31 / eli-b
METALS - SPECIATED							
Arsenic-III	407	ug/L	D	2.8		E1632AM	09/13/07 00:00 / eli-c
Arsenic-V	35.5	ug/L	D	2.5		E1632AM	09/13/07 00:00 / eli-c

Report Definitions:
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D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-005
Client Sample ID: AEH-0709-145

Report Date: 10/01/07
Collection Date: 09/12/07 11:15
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.0	s.u.		0.1		A4500-H B	09/14/07 12:46 / sld
Conductivity	511	umhos/cm		1		A2510 B	09/14/07 15:45 / kjw
Solids, Total Suspended TSS @ 105 C	1370	mg/L		10		A2540 D	09/18/07 13:22 / abb
Solids, Total Dissolved TDS @ 180 C	332	mg/L		10		A2540 C	09/18/07 13:06 / abb
INORGANICS							
Sulfate	81	mg/L		1		A4500-SO4 E	09/17/07 14:47 / abb
Alkalinity, Total as CaCO3	200	mg/L		1		A2320 B	09/17/07 13:05 / kjw
Bicarbonate as HCO3	250	mg/L		1		A2320 B	09/17/07 13:05 / kjw
Chloride	11	mg/L		1		A4500-Cl C	09/18/07 12:42 / sld
METALS, DISSOLVED							
Arsenic	1.601	mg/L		0.002		E200.8	09/19/07 22:57 / eli-b
Cadmium	0.003	mg/L		0.001		E200.8	09/19/07 22:57 / eli-b
Calcium	57	mg/L		1		E200.7	09/18/07 13:07 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/18/07 13:07 / eli-b
Iron	6.10	mg/L		0.02		E200.7	09/18/07 13:07 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/19/07 22:57 / eli-b
Magnesium	14	mg/L		1		E200.7	09/18/07 13:07 / eli-b
Manganese	5.02	mg/L		0.01		E200.7	09/18/07 13:07 / eli-b
Potassium	7	mg/L		1		E200.7	09/18/07 13:07 / eli-b
Sodium	24	mg/L		1		E200.7	09/18/07 13:07 / eli-b
Zinc	0.22	mg/L		0.01		E200.7	09/18/07 13:07 / eli-b
METALS, TOTAL							
Arsenic	5.51	mg/L	D	0.01		E200.7	09/17/07 19:35 / eli-b
Cadmium	0.025	mg/L	D	0.002		E200.7	09/17/07 19:35 / eli-b
Copper	0.144	mg/L		0.004		E200.7	09/17/07 19:35 / eli-b
Iron	47.0	mg/L		0.02		E200.7	09/17/07 19:35 / eli-b
Lead	0.61	mg/L	D	0.02		E200.7	09/17/07 19:35 / eli-b
Manganese	5.69	mg/L		0.01		E200.7	09/17/07 19:35 / eli-b
Zinc	0.85	mg/L		0.01		E200.7	09/17/07 19:35 / eli-b
METALS - SPECIATED							
Arsenic-III	1200	ug/L	D	14.1		E1632AM	09/13/07 00:00 / eli-c
Arsenic-V	282	ug/L	D	12.5		E1632AM	09/13/07 00:00 / eli-c

Report Definitions:
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MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-006
Client Sample ID: AEH-0709-146

Report Date: 10/01/07
Collection Date: 09/12/07 11:40
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	7.1	s.u.		0.1		A4500-H B	09/14/07 12:47 / sld
Conductivity	495	umhos/cm		1		A2510 B	09/14/07 15:47 / kjw
Solids, Total Suspended TSS @ 105 C	260	mg/L		10		A2540 D	09/18/07 13:23 / abb
Solids, Total Dissolved TDS @ 180 C	313	mg/L		10		A2540 C	09/18/07 13:06 / abb
INORGANICS							
Sulfate	71	mg/L		1		A4500-SO4 E	09/17/07 14:48 / abb
Alkalinity, Total as CaCO3	220	mg/L		1		A2320 B	09/17/07 13:11 / kjw
Bicarbonate as HCO3	270	mg/L		1		A2320 B	09/17/07 13:11 / kjw
Chloride	10	mg/L		1		A4500-Cl C	09/18/07 12:46 / sld
METALS, DISSOLVED							
Arsenic	2.368	mg/L		0.002		E200.8	09/19/07 23:04 / eli-b
Cadmium	ND	mg/L		0.001		E200.7	09/18/07 13:18 / eli-b
Calcium	56	mg/L		1		E200.7	09/18/07 13:18 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/18/07 13:18 / eli-b
Iron	7.07	mg/L		0.02		E200.7	09/18/07 13:18 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/19/07 23:04 / eli-b
Magnesium	12	mg/L		1		E200.7	09/18/07 13:18 / eli-b
Manganese	4.16	mg/L		0.01		E200.7	09/18/07 13:18 / eli-b
Potassium	5	mg/L		1		E200.7	09/18/07 13:18 / eli-b
Sodium	27	mg/L		1		E200.7	09/18/07 13:18 / eli-b
Zinc	0.15	mg/L		0.01		E200.7	09/18/07 13:18 / eli-b
METALS, TOTAL							
Arsenic	6.99	mg/L	D	0.01		E200.7	09/17/07 19:38 / eli-b
Cadmium	0.020	mg/L	D	0.002		E200.7	09/17/07 19:38 / eli-b
Copper	0.090	mg/L		0.004		E200.7	09/17/07 19:38 / eli-b
Iron	21.5	mg/L		0.02		E200.7	09/17/07 19:38 / eli-b
Lead	0.38	mg/L	D	0.02		E200.7	09/17/07 19:38 / eli-b
Manganese	4.12	mg/L		0.01		E200.7	09/17/07 19:38 / eli-b
Zinc	0.52	mg/L		0.01		E200.7	09/17/07 19:38 / eli-b
METALS - SPECIATED							
Arsenic-III	1900	ug/L	D	14.1		E1632AM	09/13/07 00:00 / eli-c
Arsenic-V	245	ug/L	D	12.5		E1632AM	09/13/07 00:00 / eli-c

Report Definitions:
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QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-007
Client Sample ID: AEH-0709-147

Report Date: 10/01/07
Collection Date: 09/12/07 13:10
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.7	s.u.		0.1		A4500-H B	09/14/07 12:51 / sld
Conductivity	294	umhos/cm		1		A2510 B	09/14/07 15:48 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:23 / abb
Solids, Total Dissolved TDS @ 180 C	185	mg/L		10		A2540 C	09/18/07 13:07 / abb
INORGANICS							
Sulfate	56	mg/L		1		A4500-SO4 E	09/17/07 14:49 / abb
Alkalinity, Total as CaCO3	120	mg/L		1		A2320 B	09/17/07 13:19 / kjw
Bicarbonate as HCO3	150	mg/L		1		A2320 B	09/17/07 13:19 / kjw
Chloride	4	mg/L		1		A4500-Cl C	09/18/07 12:47 / sld
METALS, DISSOLVED							
Arsenic	0.172	mg/L		0.002		E200.8	09/21/07 21:41 / eli-b
Cadmium	ND	mg/L		0.001		E200.7	09/18/07 13:21 / eli-b
Calcium	36	mg/L		1		E200.7	09/18/07 13:21 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/18/07 13:21 / eli-b
Iron	0.14	mg/L		0.02		E200.7	09/18/07 13:21 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 21:41 / eli-b
Magnesium	7	mg/L		1		E200.7	09/18/07 13:21 / eli-b
Manganese	0.28	mg/L		0.01		E200.7	09/18/07 13:21 / eli-b
Potassium	5	mg/L		1		E200.7	09/18/07 13:21 / eli-b
Sodium	11	mg/L		1		E200.7	09/18/07 13:21 / eli-b
Zinc	0.04	mg/L		0.01		E200.7	09/18/07 13:21 / eli-b
METALS, TOTAL							
Arsenic	0.163	mg/L		0.002		E200.8	09/21/07 21:49 / eli-b
Cadmium	ND	mg/L		0.001		E200.7	09/18/07 07:16 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/21/07 21:49 / eli-b
Iron	0.16	mg/L		0.02		E200.7	09/18/07 07:16 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 21:49 / eli-b
Manganese	0.27	mg/L		0.01		E200.7	09/18/07 07:16 / eli-b
Zinc	0.04	mg/L		0.01		E200.7	09/18/07 07:16 / eli-b
METALS - SPECIATED							
Arsenic-III	29.6	ug/L	D	2.8		E1632AM	09/13/07 00:00 / eli-c
Arsenic-V	148	ug/L	D	2.5		E1632AM	09/13/07 00:00 / eli-c

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-008
Client Sample ID: AEH-0709-148

Report Date: 10/01/07
Collection Date: 09/12/07 13:40
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.7	s.u.		0.1		A4500-H B	09/14/07 12:52 / sld
Conductivity	954	umhos/cm		1		A2510 B	09/14/07 15:50 / kjw
Solids, Total Suspended TSS @ 105 C	18	mg/L		10		A2540 D	09/18/07 13:24 / abb
Solids, Total Dissolved TDS @ 180 C	703	mg/L		10		A2540 C	09/18/07 13:07 / abb
INORGANICS							
Sulfate	307	mg/L	D	3		A4500-SO4 E	09/17/07 14:49 / abb
Alkalinity, Total as CaCO3	170	mg/L		1		A2320 B	09/19/07 14:01 / abb
Bicarbonate as HCO3	200	mg/L		1		A2320 B	09/19/07 14:01 / abb
Chloride	19	mg/L		1		A4500-Cl C	09/18/07 12:52 / sld
METALS, DISSOLVED							
Arsenic	4.78	mg/L	D	0.01		E200.7	09/18/07 13:25 / eli-b
Cadmium	1.709	mg/L		0.001		E200.7	09/18/07 13:25 / eli-b
Calcium	121	mg/L		1		E200.7	09/18/07 13:25 / eli-b
Copper	0.008	mg/L		0.004		E200.8	09/19/07 23:58 / eli-b
Iron	5.85	mg/L		0.02		E200.7	09/18/07 13:25 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/19/07 23:58 / eli-b
Magnesium	22	mg/L		1		E200.7	09/18/07 13:25 / eli-b
Manganese	3.25	mg/L		0.01		E200.7	09/18/07 13:25 / eli-b
Potassium	12	mg/L		1		E200.7	09/18/07 13:25 / eli-b
Sodium	50	mg/L		1		E200.7	09/18/07 13:25 / eli-b
Zinc	5.76	mg/L		0.01		E200.7	09/18/07 13:25 / eli-b
METALS, TOTAL							
Arsenic	5.22	mg/L	D	0.02		E200.7	09/18/07 07:19 / eli-b
Cadmium	1.76	mg/L		0.001		E200.7	09/18/07 07:19 / eli-b
Copper	0.014	mg/L		0.004		E200.8	09/20/07 00:06 / eli-b
Iron	6.48	mg/L		0.02		E200.7	09/18/07 07:19 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/20/07 00:06 / eli-b
Manganese	3.21	mg/L		0.01		E200.7	09/18/07 07:19 / eli-b
Zinc	5.60	mg/L		0.01		E200.7	09/18/07 07:19 / eli-b
METALS - SPECIATED							
Arsenic-III	2860	ug/L	D	28.2		E1632AM	09/13/07 00:00 / eli-c
Arsenic-V	1400	ug/L	D	25.0		E1632AM	09/13/07 00:00 / eli-c

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-009
Client Sample ID: AEH-0709-149

Report Date: 10/01/07
Collection Date: 09/12/07 14:15
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.7	s.u.		0.1		A4500-H B	09/14/07 12:55 / sld
Conductivity	1630	umhos/cm		1		A2510 B	09/14/07 15:51 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:24 / abb
Solids, Total Dissolved TDS @ 180 C	1190	mg/L		10		A2540 C	09/18/07 13:07 / abb
INORGANICS							
Sulfate	532	mg/L	D	6		A4500-SO4 E	09/17/07 14:49 / abb
Alkalinity, Total as CaCO3	160	mg/L		1		A2320 B	09/19/07 14:06 / abb
Bicarbonate as HCO3	190	mg/L		1		A2320 B	09/19/07 14:06 / abb
Chloride	87	mg/L		1		A4500-Cl C	09/18/07 12:57 / sld
METALS, DISSOLVED							
Arsenic	2.418	mg/L		0.002		E200.8	09/20/07 00:13 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/20/07 00:13 / eli-b
Calcium	92	mg/L		1		E200.7	09/18/07 13:28 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/18/07 13:28 / eli-b
Iron	0.04	mg/L		0.02		E200.7	09/18/07 13:28 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/20/07 00:13 / eli-b
Magnesium	24	mg/L		1		E200.7	09/18/07 13:28 / eli-b
Manganese	4.58	mg/L		0.01		E200.7	09/18/07 13:28 / eli-b
Potassium	12	mg/L		1		E200.7	09/18/07 13:28 / eli-b
Selenium	0.134	mg/L		0.005		E200.8	09/20/07 00:13 / eli-b
Sodium	261	mg/L		1		E200.7	09/18/07 13:28 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/18/07 13:28 / eli-b

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-010
Client Sample ID: AEH-0709-150

Report Date: 10/01/07
Collection Date: 09/12/07 14:30
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.6	s.u.		0.1		A4500-H B	09/14/07 12:57 / sld
Conductivity	1630	umhos/cm		1		A2510 B	09/14/07 15:52 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:25 / abb
Solids, Total Dissolved TDS @ 180 C	1180	mg/L		10		A2540 C	09/18/07 13:07 / abb
INORGANICS							
Sulfate	521	mg/L	D	6		A4500-SO4 E	09/17/07 14:50 / abb
Alkalinity, Total as CaCO3	160	mg/L		1		A2320 B	09/19/07 14:12 / abb
Bicarbonate as HCO3	190	mg/L		1		A2320 B	09/19/07 14:12 / abb
Chloride	80	mg/L		1		A4500-Cl C	09/18/07 12:58 / sld
METALS, DISSOLVED							
Arsenic	2.438	mg/L		0.002		E200.8	09/20/07 00:21 / eli-b
Cadmium	ND	mg/L		0.001		E200.7	09/18/07 13:32 / eli-b
Calcium	95	mg/L		1		E200.7	09/18/07 13:32 / eli-b
Copper	ND	mg/L		0.004		E200.7	09/18/07 13:32 / eli-b
Iron	0.03	mg/L		0.02		E200.7	09/18/07 13:32 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/20/07 00:21 / eli-b
Magnesium	25	mg/L		1		E200.7	09/18/07 13:32 / eli-b
Manganese	4.68	mg/L		0.01		E200.7	09/18/07 13:32 / eli-b
Potassium	12	mg/L		1		E200.7	09/18/07 13:32 / eli-b
Selenium	0.135	mg/L		0.005		E200.8	09/20/07 00:21 / eli-b
Sodium	255	mg/L		1		E200.7	09/18/07 13:32 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/18/07 13:32 / eli-b

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-011
Client Sample ID: AEH-0709-151

Report Date: 10/01/07
Collection Date: 09/12/07 15:10
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.5	s.u.		0.1		A4500-H B	09/14/07 13:00 / sld
Conductivity	1610	umhos/cm		1		A2510 B	09/14/07 15:54 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:25 / abb
Solids, Total Dissolved TDS @ 180 C	1300	mg/L		10		A2540 C	09/18/07 13:08 / abb
INORGANICS							
Sulfate	568	mg/L	D	6		A4500-SO4 E	09/17/07 14:50 / abb
Alkalinity, Total as CaCO3	120	mg/L		1		A2320 B	09/19/07 14:17 / abb
Bicarbonate as HCO3	140	mg/L		1		A2320 B	09/19/07 14:17 / abb
Chloride	117	mg/L		1		A4500-Cl C	09/18/07 13:03 / sld
METALS, DISSOLVED							
Arsenic	3.640	mg/L		0.002		E200.8	09/20/07 00:29 / eli-b
Cadmium	0.004	mg/L		0.001		E200.8	09/20/07 00:29 / eli-b
Calcium	159	mg/L		1		E200.7	09/17/07 21:15 / eli-b
Copper	0.007	mg/L		0.004		E200.8	09/20/07 00:29 / eli-b
Iron	0.05	mg/L		0.02		E200.7	09/17/07 21:15 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/20/07 00:29 / eli-b
Magnesium	54	mg/L		1		E200.7	09/17/07 21:15 / eli-b
Manganese	9.89	mg/L		0.01		E200.7	09/17/07 21:15 / eli-b
Potassium	10	mg/L		1		E200.7	09/17/07 21:15 / eli-b
Selenium	0.946	mg/L		0.005		E200.8	09/20/07 00:29 / eli-b
Sodium	127	mg/L		1		E200.7	09/17/07 21:15 / eli-b
Zinc	0.47	mg/L		0.01		E200.7	09/17/07 21:15 / eli-b

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090115-012
Client Sample ID: AEH-0709-152

Report Date: 10/01/07
Collection Date: 09/12/07 15:00
DateReceived: 09/12/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	4.8	s.u.		0.1		A4500-H B	09/14/07 13:01 / sld
Conductivity	6	umhos/cm		1		A2510 B	09/14/07 15:55 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:25 / abb
Solids, Total Dissolved TDS @ 180 C	38	mg/L		10		A2540 C	09/18/07 13:08 / abb
Sample AEH-0709-152 was re-analyzed to confirm TDS results. Abb							
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/17/07 14:51 / abb
Alkalinity, Total as CaCO3	2	mg/L		1		A2320 B	09/19/07 14:18 / abb
Bicarbonate as HCO3	2	mg/L		1		A2320 B	09/19/07 14:18 / abb
Chloride	ND	mg/L		1		A4500-Cl C	09/18/07 13:04 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	09/20/07 00:59 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/20/07 00:59 / eli-b
Calcium	ND	mg/L		1		E200.7	09/17/07 21:18 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/20/07 00:59 / eli-b
Iron	0.03	mg/L		0.02		E200.7	09/17/07 21:18 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/20/07 00:59 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/17/07 21:18 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/17/07 21:18 / eli-b
Potassium	ND	mg/L		1		E200.7	09/17/07 21:18 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/20/07 00:59 / eli-b
Sodium	ND	mg/L		1		E200.7	09/17/07 21:18 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/17/07 21:18 / eli-b

Report Definitions:
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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B								Analytical Run: TITTR_070907A	
Sample ID: CCV1_070917A	Continuing Calibration Verification Standard							09/17/07 11:57	
Alkalinity, Total as CaCO3	1100	mg/L	4.0	110	90	110			
Bicarbonate as HCO3	20	mg/L	4.0		0	0			
Method: A2320 B								Batch: 070917A-ALK-W	
Sample ID: MBLK1_070917A	Method Blank				Run: TITTR_070907A			09/17/07 09:19	
Alkalinity, Total as CaCO3	ND	mg/L	1						
Bicarbonate as HCO3	ND	mg/L	1						
Sample ID: LCS1_070917A	Laboratory Control Sample				Run: TITTR_070907A			09/17/07 09:32	
Alkalinity, Total as CaCO3	630	mg/L	4.0	105	90	110			
Sample ID: H07090102-004AMS	Sample Matrix Spike				Run: TITTR_070907A			09/17/07 11:03	
Alkalinity, Total as CaCO3	620	mg/L	4.0	103	90	110			
Sample ID: H07090102-004AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070907A			09/17/07 11:07	
Alkalinity, Total as CaCO3	620	mg/L	4.0	102	90	110	0.6	20	
Sample ID: H07090115-002ADUP	Sample Duplicate				Run: TITTR_070907A			09/17/07 12:39	
Alkalinity, Total as CaCO3	2.0	mg/L	4.0				0.0	20	
Bicarbonate as HCO3	2.4	mg/L	4.0				0.0	20	
Method: A2320 B								Batch: 070919A-ALK-W	
Sample ID: MBLK1_070919A	Method Blank				Run: TITTR_070919A			09/19/07 13:52	
Alkalinity, Total as CaCO3	ND	mg/L	1						
Bicarbonate as HCO3	ND	mg/L	1						
Sample ID: LCS1_070919A	Laboratory Control Sample				Run: TITTR_070919A			09/19/07 13:56	
Alkalinity, Total as CaCO3	600	mg/L	4.0	100	90	110			
Sample ID: H07090115-012AMS	Sample Matrix Spike				Run: TITTR_070919A			09/19/07 14:23	
Alkalinity, Total as CaCO3	580	mg/L	4.0	97	90	110			
Sample ID: H07090115-012AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070919A			09/19/07 14:28	
Alkalinity, Total as CaCO3	580	mg/L	4.0	97	90	110	0.2	20	
Sample ID: H07090135-010ADUP	Sample Duplicate				Run: TITTR_070919A			09/19/07 15:25	
Alkalinity, Total as CaCO3	1100	mg/L	4.0				3.1	20	
Bicarbonate as HCO3	1400	mg/L	4.0				3.1	20	

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B								Batch: 070914A-COND-PROBE-W	
Sample ID: LCS1_070914A	Laboratory Control Sample				Run: COND_070914B			09/14/07 15:38	
Conductivity	726	umhos/cm	1.0	101	90	110			
Sample ID: H07090115-005ADUP	Sample Duplicate				Run: COND_070914B			09/14/07 15:46	
Conductivity	509	umhos/cm	1.0				0.3	10	
Method: A2540 C								Batch: 070918A-SLDS-TDS-W	
Sample ID: MBLK1_070918A	Method Blank				Run: SOLIDS_070918B			09/18/07 13:04	
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	1.0						
Sample ID: H07090115-006AMS	Sample Matrix Spike				Run: SOLIDS_070918B			09/18/07 13:06	
Solids, Total Dissolved TDS @ 180 C	2300	mg/L	10	99	80	120			
Sample ID: H07090121-006DDUP	Sample Duplicate				Run: SOLIDS_070918B			09/18/07 13:11	
Solids, Total Dissolved TDS @ 180 C	245	mg/L	10				2.9	20	
Method: A2540 D								Batch: 070918A-SLDS-TSS-W	
Sample ID: LCS1_070918A	Laboratory Control Sample				Run: SOLIDS_070918A			09/18/07 13:20	
Solids, Total Suspended TSS @ 105 C	2080	mg/L	10	104	70	130			
Sample ID: H07090115-005ADUP	Sample Duplicate				Run: SOLIDS_070918A			09/18/07 13:23	
Solids, Total Suspended TSS @ 105 C	1420	mg/L	10				3.6	10	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-Cl C								Batch: 070918A-CL-TTR-W	
Sample ID: MBLK1_070918A	Method Blank				Run: TITTR_070918A			09/18/07 11:41	
Chloride	ND	mg/L	0.7						
Sample ID: LCS1_070918A	Laboratory Control Sample				Run: TITTR_070918A			09/18/07 11:42	
Chloride	105	mg/L	1.0	105	90	110			
Sample ID: H07090102-007AMS	Sample Matrix Spike				Run: TITTR_070918A			09/18/07 12:19	
Chloride	10.5	mg/L	1.0	105	90	110			
Sample ID: H07090102-007AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070918A			09/18/07 12:21	
Chloride	9.50	mg/L	1.0	95	90	110	10	20	
Sample ID: H07090115-008ADUP	Sample Duplicate				Run: TITTR_070918A			09/18/07 12:54	
Chloride	20.0	mg/L	1.0				5.1	20	
Sample ID: H07090121-006DMS	Sample Matrix Spike				Run: TITTR_070918A			09/18/07 14:02	
Chloride	26.5	mg/L	1.0	90	90	110			
Sample ID: H07090121-006DMSD	Sample Matrix Spike Duplicate				Run: TITTR_070918A			09/18/07 14:04	
Chloride	26.0	mg/L	1.0	85	90	110	1.9	20	
Method: A4500-H B								Batch: 070914A-PH-W	
Sample ID: LCS1_070914A	Laboratory Control Sample				Run: PH_070914B			09/14/07 12:38	
pH	7.08	s.u.	0.10	101	98.6	101.4			
Sample ID: H07090115-006ADUP	Sample Duplicate				Run: PH_070914B			09/14/07 12:49	
pH	7.19	s.u.	0.10				1.1	2	

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-SO4 E								Batch: 070917A-SO4-TURB-W	
Sample ID: MBLK1_070917A	Method Blank				Run: TURBIDITY_070917A			09/17/07 14:36	
Sulfate	ND	mg/L	0.6						
Sample ID: LCS1_070917A	Laboratory Control Sample				Run: TURBIDITY_070917A			09/17/07 14:37	
Sulfate	101	mg/L	1.1	101	90	110			
Sample ID: H07090102-004AMS	Sample Matrix Spike				Run: TURBIDITY_070917A			09/17/07 14:41	
Sulfate	18.7	mg/L	1.0	94	80	120			
Sample ID: H07090102-004AMSD	Sample Matrix Spike Duplicate				Run: TURBIDITY_070917A			09/17/07 14:42	
Sulfate	18.8	mg/L	1.0	94	80	120	0.5	10	
Sample ID: H07090115-012AMS	Sample Matrix Spike				Run: TURBIDITY_070917A			09/17/07 14:51	
Sulfate	18.0	mg/L	1.0	90	80	120			
Sample ID: H07090115-012AMSD	Sample Matrix Spike Duplicate				Run: TURBIDITY_070917A			09/17/07 14:52	
Sulfate	18.1	mg/L	1.0	91	80	120	0.6	10	
Method: E1632AM								Batch: C_R89700	
Sample ID: H07090115-005D	Sample Matrix Spike				Run: SUB-C89700			09/13/07 00:00	
Arsenic-III	3100	ug/L	14	76	80	120			S
Arsenic-V	2300	ug/L	12	80	80	120			
- Matrix spike recoveries outside the acceptance criteria of 80 to 120 percent are considered matrix related, not system related. Reported values are within method specifications.									
Sample ID: H07090115-005D	Sample Matrix Spike Duplicate				Run: SUB-C89700			09/13/07 00:00	
Arsenic-III	3200	ug/L	14	80	80	120	3.0	20	
Arsenic-V	2400	ug/L	12	83	80	120	2.9	20	
Sample ID: 301-57-6	Laboratory Control Sample				Run: SUB-C89700			09/13/07 00:00	
Arsenic-III	45	ug/L	1.0	89	80	120			
Arsenic-V	46	ug/L	1.0	92	80	120			
Sample ID: MBLK	Method Blank				Run: SUB-C89700			09/13/07 00:00	
Arsenic-III	ND	ug/L	0.3						
Arsenic-V	ND	ug/L	0.2						

Qualifiers:

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ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: B_28797
Sample ID: MB-28797	Method Blank				Run: SUB-B99494				09/17/07 17:01
Arsenic	0.01	mg/L	0.005						
Cadmium	ND	mg/L	0.001						
Copper	ND	mg/L	0.001						
Iron	ND	mg/L	0.005						
Lead	ND	mg/L	0.01						
Manganese	0.002	mg/L	0.001						
Zinc	ND	mg/L	0.001						
Sample ID: LCS1-28797	Laboratory Control Sample				Run: SUB-B99494				09/17/07 17:05
Arsenic	0.122	mg/L	0.0050	110	85	115			
Cadmium	0.0519	mg/L	0.0010	104	85	115			
Copper	0.0973	mg/L	0.010	97	85	115			
Iron	0.522	mg/L	0.030	104	85	115			
Lead	0.0993	mg/L	0.010	99	85	115			
Manganese	0.518	mg/L	0.010	103	85	115			
Zinc	0.101	mg/L	0.010	101	85	115			
Sample ID: LCS3-28797	Laboratory Control Sample				Run: SUB-B99494				09/17/07 17:08
Arsenic	0.970	mg/L	0.0051	96	85	115			
Cadmium	0.496	mg/L	0.0010	99	85	115			
Copper	0.983	mg/L	0.010	98	85	115			
Iron	5.00	mg/L	0.030	100	85	115			
Lead	1.01	mg/L	0.010	101	85	115			
Manganese	4.98	mg/L	0.010	100	85	115			
Zinc	1.03	mg/L	0.010	103	85	115			
Sample ID: B07091149-001CMS1	Sample Matrix Spike				Run: SUB-B99494				09/17/07 17:58
Cadmium	0.0488	mg/L	0.0050	88	70	130			
Copper	0.114	mg/L	0.010	94	70	130			
Iron	1.39	mg/L	0.030	110	70	130			
Manganese	0.549	mg/L	0.010	105	70	130			
Sample ID: B07091149-001CMSD1	Sample Matrix Spike Duplicate				Run: SUB-B99494				09/17/07 18:02
Cadmium	0.0489	mg/L	0.0050	88	70	130	0.3	20	
Copper	0.120	mg/L	0.010	99	70	130	4.9	20	
Iron	1.42	mg/L	0.030	117	70	130	2.3	20	
Manganese	0.554	mg/L	0.010	106	70	130	0.9	20	
Sample ID: B07091174-001BMS3	Sample Matrix Spike				Run: SUB-B99494				09/17/07 19:10
Arsenic	0.989	mg/L	0.025	89	70	130			
Cadmium	0.495	mg/L	0.0050	99	70	130			

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: B_28797
Sample ID: B07091174-001BMS3	Sample Matrix Spike				Run: SUB-B99494				09/17/07 19:10
Copper	1.05	mg/L	0.010	103	70	130			
Iron	8.38	mg/L	0.030	104	70	130			
Lead	0.956	mg/L	0.050	96	70	130			
Manganese	5.26	mg/L	0.010	103	70	130			
Zinc	1.11	mg/L	0.010	110	70	130			
Sample ID: B07091174-001BMSD3	Sample Matrix Spike Duplicate				Run: SUB-B99494				09/17/07 19:13
Arsenic	1.10	mg/L	0.025	100	70	130	11	20	
Cadmium	0.491	mg/L	0.0050	98	70	130	0.7	20	
Copper	1.05	mg/L	0.010	104	70	130	0.3	20	
Iron	8.37	mg/L	0.030	104	70	130	0.2	20	
Lead	0.928	mg/L	0.050	93	70	130	3.0	20	
Manganese	5.19	mg/L	0.010	101	70	130	1.3	20	
Zinc	1.11	mg/L	0.010	110	70	130	0.5	20	
Method: E200.7									Analytical Run: SUB-B99494
Sample ID: QCS	Initial Calibration Verification Standard								09/17/07 14:45
Arsenic	0.995	mg/L	0.10	100	90	110			
Cadmium	0.497	mg/L	0.010	99	90	110			
Copper	1.01	mg/L	0.010	101	90	110			
Iron	4.94	mg/L	0.030	99	90	110			
Lead	0.998	mg/L	0.050	100	90	110			
Manganese	4.78	mg/L	0.010	96	90	110			
Zinc	1.03	mg/L	0.010	103	90	110			

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: SUB-B99498
Sample ID: QCS	Initial Calibration Verification Standard								09/17/07 12:16
Arsenic	0.961	mg/L	0.10	96	90	110			
Cadmium	0.496	mg/L	0.010	99	90	110			
Calcium	49.5	mg/L	1.0	99	90	110			
Iron	4.96	mg/L	0.030	99	90	110			
Magnesium	49.7	mg/L	1.0	99	90	110			
Manganese	4.87	mg/L	0.010	97	90	110			
Potassium	49.5	mg/L	1.0	99	90	110			
Sodium	49.6	mg/L	1.0	99	90	110			
Zinc	1.00	mg/L	0.010	100	90	110			
Method: E200.7									Batch: B_R99498
Sample ID: MB-TJADIS070917A	Method Blank				Run: SUB-B99498				09/17/07 12:46
Arsenic	ND	mg/L	0.07						
Cadmium	ND	mg/L	0.002						
Calcium	ND	mg/L	0.2						
Iron	ND	mg/L	0.005						
Magnesium	ND	mg/L	0.1						
Manganese	ND	mg/L	0.001						
Potassium	ND	mg/L	0.07						
Sodium	ND	mg/L	0.2						
Zinc	ND	mg/L	0.001						
Sample ID: LFB-TJADIS070917A	Laboratory Fortified Blank				Run: SUB-B99498				09/17/07 12:50
Arsenic	1.04	mg/L	0.10	104	85	115			
Cadmium	0.517	mg/L	0.010	103	85	115			
Calcium	50.7	mg/L	1.0	101	85	115			
Iron	5.17	mg/L	0.030	103	85	115			
Magnesium	50.9	mg/L	1.0	102	85	115			
Manganese	5.05	mg/L	0.010	101	85	115			
Potassium	50.9	mg/L	1.0	102	85	115			
Sodium	50.5	mg/L	1.0	101	85	115			
Zinc	1.04	mg/L	0.010	104	85	115			
Sample ID: B07091246-008BMS2	Sample Matrix Spike				Run: SUB-B99498				09/17/07 22:00
Arsenic	2.051	mg/L	0.14	103	70	130			
Cadmium	1.018	mg/L	0.0039	101	70	130			
Calcium	206.5	mg/L	1.0	101	70	130			
Iron	10.25	mg/L	0.030	102	70	130			
Magnesium	146.4	mg/L	1.0	106	70	130			
Manganese	9.943	mg/L	0.010	99	70	130			
Potassium	113.3	mg/L	1.0	104	70	130			

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: B_R99498
Sample ID: B07091246-008BMS2	Sample Matrix Spike				Run: SUB-B99498				09/17/07 22:00
Sodium	172.0	mg/L	1.0	103	70	130			
Zinc	2.080	mg/L	0.010	103	70	130			
Sample ID: B07091246-008BMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99498				09/17/07 22:04
Arsenic	2.046	mg/L	0.14	102	70	130	0.2	20	
Cadmium	1.012	mg/L	0.0039	101	70	130	0.6	20	
Calcium	205.3	mg/L	1.0	100	70	130	0.6	20	
Iron	10.25	mg/L	0.030	102	70	130	0.1	20	
Magnesium	145.5	mg/L	1.0	105	70	130	0.6	20	
Manganese	9.928	mg/L	0.010	99	70	130	0.1	20	
Potassium	111.4	mg/L	1.0	102	70	130	1.7	20	
Sodium	168.6	mg/L	1.0	100	70	130	2.0	20	
Zinc	2.081	mg/L	0.010	103	70	130	0.1	20	
Sample ID: B07091151-012BMS2	Sample Matrix Spike				Run: SUB-B99498				09/18/07 07:08
Arsenic	2.016	mg/L	0.12	101	70	130			
Cadmium	1.006	mg/L	0.0031	101	70	130			
Calcium	229.8	mg/L	1.0	102	70	130			
Iron	11.30	mg/L	0.030	101	70	130			
Magnesium	135.6	mg/L	1.0	104	70	130			
Manganese	9.870	mg/L	0.010	98	70	130			
Potassium	134.2	mg/L	1.0	103	70	130			
Sodium	312.8	mg/L	1.0	108	70	130			
Zinc	2.075	mg/L	0.010	103	70	130			
Sample ID: B07091151-012BMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99498				09/18/07 07:12
Arsenic	1.954	mg/L	0.12	98	70	130	3.1	20	
Cadmium	1.010	mg/L	0.0031	101	70	130	0.3	20	
Calcium	230.3	mg/L	1.0	102	70	130	0.2	20	
Iron	11.26	mg/L	0.030	101	70	130	0.3	20	
Magnesium	135.7	mg/L	1.0	104	70	130	0.0	20	
Manganese	9.850	mg/L	0.010	98	70	130	0.2	20	
Potassium	134.7	mg/L	1.0	104	70	130	0.4	20	
Sodium	315.0	mg/L	1.0	110	70	130	0.7	20	
Zinc	2.066	mg/L	0.010	103	70	130	0.4	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: B_R99585
Sample ID: MB-SPDIS070918A	Method Blank				Run: SUB-B99585				09/18/07 12:35
Arsenic	0.02	mg/L	0.01						
Cadmium	0.0007	mg/L	0.0003						
Calcium	ND	mg/L	0.009						
Copper	0.002	mg/L	0.001						
Iron	ND	mg/L	0.002						
Magnesium	ND	mg/L	0.01						
Manganese	ND	mg/L	0.0002						
Potassium	ND	mg/L	0.02						
Sodium	ND	mg/L	0.2						
Zinc	0.007	mg/L	0.0004						
Sample ID: LFB-SPDIS070918A	Laboratory Fortified Blank				Run: SUB-B99585				09/18/07 12:39
Arsenic	1.02	mg/L	0.10	100	85	115			
Cadmium	0.508	mg/L	0.010	101	85	115			
Calcium	50.0	mg/L	1.0	100	85	115			
Copper	1.03	mg/L	0.010	103	85	115			
Iron	5.07	mg/L	0.030	101	85	115			
Magnesium	51.2	mg/L	1.0	102	85	115			
Manganese	5.13	mg/L	0.010	103	85	115			
Potassium	51.3	mg/L	1.0	103	85	115			
Sodium	54.1	mg/L	1.0	108	85	115			
Zinc	1.06	mg/L	0.010	105	85	115			
Sample ID: B07091322-001CMS2	Sample Matrix Spike				Run: SUB-B99585				09/18/07 13:39
Arsenic	1.194	mg/L	0.010	117	70	130			
Cadmium	0.5069	mg/L	0.0010	101	70	130			
Calcium	60.49	mg/L	1.0	100	70	130			
Copper	0.9853	mg/L	0.010	99	70	130			
Iron	6.548	mg/L	0.030	101	70	130			
Magnesium	53.24	mg/L	1.0	101	70	130			
Manganese	5.182	mg/L	0.010	101	70	130			
Potassium	53.24	mg/L	1.0	105	70	130			
Sodium	55.28	mg/L	1.0	103	70	130			
Zinc	1.065	mg/L	0.010	105	70	130			
Sample ID: B07091322-001CMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99585				09/18/07 13:44
Arsenic	1.203	mg/L	0.010	117	70	130	0.7	20	
Cadmium	0.4979	mg/L	0.0010	100	70	130	1.8	20	
Calcium	58.96	mg/L	1.0	97	70	130	2.6	20	
Copper	1.010	mg/L	0.010	101	70	130	2.5	20	
Iron	6.518	mg/L	0.030	100	70	130	0.5	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: B_R99585
Sample ID: B07091322-001CMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99585				09/18/07 13:44
Magnesium	53.45	mg/L	1.0	102	70	130	0.4	20	
Manganese	5.110	mg/L	0.010	100	70	130	1.4	20	
Potassium	51.10	mg/L	1.0	100	70	130	4.1	20	
Sodium	55.79	mg/L	1.0	104	70	130	0.9	20	
Zinc	1.065	mg/L	0.010	105	70	130	0.0	20	
Sample ID: H07090115-001B	Sample Matrix Spike				Run: SUB-B99585				09/18/07 12:46
Arsenic	3.982	mg/L	0.020	122	70	130			
Cadmium	1.024	mg/L	0.0010	102	70	130			
Calcium	143.2	mg/L	1.0	99	70	130			
Copper	2.093	mg/L	0.010	105	70	130			
Iron	10.28	mg/L	0.030	103	70	130			
Magnesium	111.6	mg/L	1.0	104	70	130			
Manganese	10.22	mg/L	0.010	102	70	130			
Potassium	165.9	mg/L	1.0	76	70	130			
Sodium	263.4	mg/L	1.0	112	70	130			
Zinc	2.164	mg/L	0.010	108	70	130			
Sample ID: H07090115-001B	Sample Matrix Spike Duplicate				Run: SUB-B99585				09/18/07 12:49
Arsenic	3.925	mg/L	0.020	119	70	130	1.4	20	
Cadmium	1.040	mg/L	0.0010	104	70	130	1.6	20	
Calcium	146.1	mg/L	1.0	102	70	130	2.0	20	
Copper	2.007	mg/L	0.010	100	70	130	4.2	20	
Iron	10.44	mg/L	0.030	104	70	130	1.6	20	
Magnesium	111.8	mg/L	1.0	105	70	130	0.2	20	
Manganese	10.42	mg/L	0.010	104	70	130	2.0	20	
Potassium	168.3	mg/L	1.0	79	70	130	1.5	20	
Sodium	257.0	mg/L	1.0	105	70	130	2.4	20	
Zinc	2.183	mg/L	0.010	109	70	130	0.8	20	

Qualifiers:

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_28797
Sample ID: MB-28797	Method Blank				Run: SUB-B99681				09/19/07 16:47
Arsenic	ND	mg/L	4E-05						
Cadmium	ND	mg/L	9E-06						
Lead	1E-05	mg/L	8E-06						
Sample ID: LCS1-28797	Laboratory Control Sample				Run: SUB-B99681				09/19/07 16:54
Arsenic	0.0996	mg/L	0.0050	100	85	115			
Cadmium	0.0494	mg/L	0.0010	99	85	115			
Lead	0.103	mg/L	0.010	103	85	115			
Sample ID: B07091149-001CMS1	Sample Matrix Spike				Run: SUB-B99681				09/19/07 17:25
Arsenic	0.09787	mg/L	0.0050	97	70	130			
Cadmium	0.04567	mg/L	0.0010	91	70	130			
Lead	0.1056	mg/L	0.010	105	70	130			
Sample ID: B07091149-001CMSD1	Sample Matrix Spike Duplicate				Run: SUB-B99681				09/19/07 17:33
Arsenic	0.09899	mg/L	0.0050	98	70	130	1.1	20	
Cadmium	0.04633	mg/L	0.0010	93	70	130	1.4	20	
Lead	0.1070	mg/L	0.010	106	70	130	1.3	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: SUB-B99681	
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard								09/19/07 10:05	
Arsenic	0.050	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.048	mg/L	0.010	97	90	110			
Lead	0.050	mg/L	0.010	100	90	110			
Selenium	0.050	mg/L	0.0050	99	90	110			
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard								09/20/07 02:40	
Arsenic	0.051	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.049	mg/L	0.010	98	90	110			
Lead	0.050	mg/L	0.010	101	90	110			
Selenium	0.050	mg/L	0.0050	101	90	110			
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard								09/19/07 16:08	
Arsenic	0.051	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.049	mg/L	0.010	98	90	110			
Lead	0.050	mg/L	0.010	100	90	110			
Selenium	0.050	mg/L	0.0050	100	90	110			
Method: E200.8								Batch: B_R99681	
Sample ID: LRB Method Blank					Run: SUB-B99681			09/19/07 11:07	
Arsenic	ND	mg/L	4E-05						
Cadmium	ND	mg/L	9E-06						
Copper	ND	mg/L	7E-05						
Lead	ND	mg/L	8E-06						
Selenium	ND	mg/L	0.0001						
Sample ID: LFB Laboratory Fortified Blank					Run: SUB-B99681			09/19/07 11:15	
Arsenic	0.049	mg/L	0.0050	98	85	115			
Cadmium	0.049	mg/L	0.0010	97	85	115			
Copper	0.050	mg/L	0.010	100	85	115			
Lead	0.050	mg/L	0.010	100	85	115			
Selenium	0.048	mg/L	0.0050	97	85	115			
Sample ID: B07091108-017AMS Sample Matrix Spike					Run: SUB-B99681			09/20/07 05:22	
Arsenic	0.054	mg/L	0.0010	106	70	130			
Cadmium	0.052	mg/L	0.0010	103	70	130			
Copper	0.23	mg/L	0.010	95	70	130			
Lead	0.051	mg/L	0.0010	101	70	130			
Selenium	0.054	mg/L	0.0050	108	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

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877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_R99681
Sample ID: B07091108-017AMS	Sample Matrix Spike				Run: SUB-B99681				09/20/07 05:22
Sample ID: B07091108-017AMSD	Sample Matrix Spike Duplicate				Run: SUB-B99681				09/20/07 05:30
Arsenic	0.054	mg/L	0.0010	106	70	130	0.4	20	
Cadmium	0.051	mg/L	0.0010	103	70	130	0.3	20	
Copper	0.24	mg/L	0.010	101	70	130	1.4	20	
Lead	0.051	mg/L	0.0010	102	70	130	0.5	20	
Selenium	0.055	mg/L	0.0050	110	70	130	1.3	20	
Sample ID: B07090769-001AMS	Sample Matrix Spike				Run: SUB-B99681				09/19/07 14:51
Arsenic	0.054	mg/L	0.0010	106	70	130			
Cadmium	0.051	mg/L	0.0010	101	70	130			
Copper	0.052	mg/L	0.010	100	70	130			
Lead	0.051	mg/L	0.0010	102	70	130			
Selenium	0.053	mg/L	0.0050	105	70	130			
Sample ID: B07090769-001AMSD	Sample Matrix Spike Duplicate				Run: SUB-B99681				09/19/07 14:58
Arsenic	0.053	mg/L	0.0010	104	70	130	1.5	20	
Cadmium	0.051	mg/L	0.0010	101	70	130	0.3	20	
Copper	0.051	mg/L	0.010	98	70	130	1.3	20	
Lead	0.051	mg/L	0.0010	101	70	130	0.4	20	
Selenium	0.052	mg/L	0.0050	103	70	130	1.4	20	
Sample ID: B07091480-007BMS	Sample Matrix Spike				Run: SUB-B99681				09/19/07 20:46
Arsenic	0.054	mg/L	0.0010	107	70	130			
Cadmium	0.052	mg/L	0.0010	104	70	130			
Copper	0.050	mg/L	0.010	99	70	130			
Lead	0.052	mg/L	0.0010	103	70	130			
Selenium	0.055	mg/L	0.0050	109	70	130			
Sample ID: B07091480-007BMSD	Sample Matrix Spike Duplicate				Run: SUB-B99681				09/19/07 20:53
Arsenic	0.054	mg/L	0.0010	106	70	130	0.9	20	
Cadmium	0.052	mg/L	0.0010	103	70	130	0.5	20	
Copper	0.050	mg/L	0.010	98	70	130	1.0	20	
Lead	0.051	mg/L	0.0010	103	70	130	0.6	20	
Selenium	0.055	mg/L	0.0050	109	70	130	0.4	20	
Sample ID: H07090115-001B	Sample Matrix Spike				Run: SUB-B99681				09/19/07 22:11
Arsenic	1.684	mg/L	0.0050		70	130			A
Cadmium	0.2531	mg/L	0.0010	101	70	130			
Copper	0.2470	mg/L	0.010	97	70	130			
Lead	0.2584	mg/L	0.010	103	70	130			
Selenium	0.3155	mg/L	0.0050	102	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Batch: B_R99681	
Sample ID: H07090115-001B	Sample Matrix Spike				Run: SUB-B99681			09/19/07 22:11	
Sample ID: H07090115-001B	Sample Matrix Spike Duplicate				Run: SUB-B99681			09/19/07 22:18	
Arsenic	1.692	mg/L	0.0050		70	130	0.5	20	A
Cadmium	0.2551	mg/L	0.0010	102	70	130	0.8	20	
Copper	0.2514	mg/L	0.010	99	70	130	1.7	20	
Lead	0.2598	mg/L	0.010	104	70	130	0.5	20	
Selenium	0.3174	mg/L	0.0050	102	70	130	0.6	20	
Sample ID: H07090115-011B	Sample Matrix Spike				Run: SUB-B99681			09/20/07 00:37	
Arsenic	3.824	mg/L	0.0050		70	130			A
Cadmium	0.2534	mg/L	0.0010	100	70	130			
Copper	0.2486	mg/L	0.010	97	70	130			
Lead	0.2561	mg/L	0.010	102	70	130			
Selenium	1.171	mg/L	0.0050	90	70	130			
Sample ID: H07090115-011B	Sample Matrix Spike Duplicate				Run: SUB-B99681			09/20/07 00:44	
Arsenic	3.836	mg/L	0.0050		70	130	0.3	20	A
Cadmium	0.2562	mg/L	0.0010	101	70	130	1.1	20	
Copper	0.2477	mg/L	0.010	96	70	130	0.4	20	
Lead	0.2558	mg/L	0.010	102	70	130	0.1	20	
Selenium	1.181	mg/L	0.0050	94	70	130	0.8	20	

Qualifiers:

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ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: SUB-B99834	
Sample ID: QCS - ME070703A,ME07	Initial Calibration Verification Standard							09/21/07 14:22	
Arsenic	0.050	mg/L	0.0050	101	90	110			
Copper	0.048	mg/L	0.010	96	90	110			
Lead	0.050	mg/L	0.010	99	90	110			
Sample ID: QCS - ME070703A,ME07	Initial Calibration Verification Standard							09/22/07 02:20	
Arsenic	0.051	mg/L	0.0050	102	90	110			
Copper	0.048	mg/L	0.010	97	90	110			
Lead	0.050	mg/L	0.010	101	90	110			
Sample ID: QCS - ME070703A,ME07	Initial Calibration Verification Standard							09/22/07 17:19	
Arsenic	0.050	mg/L	0.0050	100	90	110			
Copper	0.048	mg/L	0.010	95	90	110			
Lead	0.050	mg/L	0.010	99	90	110			
Sample ID: QCS - ME070703A,ME07	Initial Calibration Verification Standard							09/23/07 08:32	
Arsenic	0.050	mg/L	0.0050	100	90	110			
Copper	0.048	mg/L	0.010	96	90	110			
Lead	0.049	mg/L	0.010	99	90	110			
Method: E200.8								Batch: B_R99834	
Sample ID: LRB	Method Blank				Run: SUB-B99834			09/21/07 15:31	
Arsenic	ND	mg/L	4E-05						
Copper	ND	mg/L	7E-05						
Lead	1E-05	mg/L	8E-06						
Sample ID: LFB	Laboratory Fortified Blank				Run: SUB-B99834			09/21/07 15:38	
Arsenic	0.054	mg/L	0.0050	108	85	115			
Copper	0.055	mg/L	0.010	109	85	115			
Lead	0.054	mg/L	0.010	108	85	115			
Sample ID: B07091652-003AMS	Sample Matrix Spike				Run: SUB-B99834			09/23/07 05:08	
Copper	0.12	mg/L	0.010	105	70	130			
Lead	0.054	mg/L	0.0010	107	70	130			
Sample ID: B07091652-003AMSD	Sample Matrix Spike Duplicate				Run: SUB-B99834			09/23/07 05:16	
Copper	0.12	mg/L	0.010	95	70	130	4.2	20	
Lead	0.054	mg/L	0.0010	108	70	130	0.4	20	
Sample ID: B07091188-001BMS	Sample Matrix Spike				Run: SUB-B99834			09/21/07 21:11	
Arsenic	0.05466	mg/L	0.0050	107	70	130			
Copper	0.05115	mg/L	0.010	101	70	130			
Lead	0.05392	mg/L	0.010	107	70	130			

Qualifiers:

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ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/01/07
Work Order: H07090115

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_R99834
Sample ID: B07091188-001BMS	*Sample Matrix Spike*				*Run: SUB-B99834*			*09/21/07 21:11*	
Sample ID: B07091188-001BMSD	Sample Matrix Spike Duplicate				Run: SUB-B99834			09/21/07 21:18	
Arsenic	0.05483	mg/L	0.0050	107	70	130	0.3	20	
Copper	0.05149	mg/L	0.010	102	70	130	0.7	20	
Lead	0.05332	mg/L	0.010	106	70	130	1.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

SLURRY WALL GROUNDWATER SAMPLING ANALYTICAL PARAMETERS

Parameter	Analytical Technique	Analytical Method	Project Detection Limit (ppm)
[illegible]			
PH	PH Meter	SM 4500H-B	
Specific Conductivity	SC Meter	SM 2510 B	
TDS	Gravimetric	SM 2540C	10
TSS	Gravimetric	SM 2540D	10
[illegible]			
Total Alkalinity as CaCo3	Titrimetric	SM 2320B	1
Bicarbonate	Titrimetric	SM 2320B	1
Sulfate	Turbidimetric	SM 4500S04 E	1
Chloride	Colorimetric	SM 4500 CL C	1
Calcium	ICP	E200.7	5
Magnesium	ICP	E200.7	5
Sodium	ICP	E200.7	5
Potassium	ICP	E200.7	5
[illegible]			
Arsenic (tot & dis)	ICP ICP-MS	200.7 200.8	0.005
Cadmium (tot & dis)	ICP ICP-MS	200.7 200.8	0.001
Copper (tot & dis)	ICP ICP-MS	200.7 200.8	0.004
Iron (tot & dis)	ICP ICP-MS	200.7 200.8	0.020
Manganese (tot & dis)	ICP ICP-MS	200.7 200.8	0.015
Lead (tot & dis)	ICP ICP-MS	200.7 200.8	0.005
Zinc (tot & dis)	ICP ICP-MS	200.7 200.8	0.020
As III, As V		E 1632A M	0.005
[illegible]			
SWL	Electric Tape	HF-SOP-10	0.01 ft
Temperature	PH Meter	HF-SOP-20	NA
Dissolved Oxygen (DO)	DO Meter	HF-SOP-22	NA
PH	pH Meter	HF-SOP-20	NA
Specific Conductivity (SC)	SC Meter	HF-SOP-79	NA

[1] Samples will be analyzed for total metals and for dissolved constituents (field-filtered through a 0.45 μm filter prior to preservation).

TABLE B. 2007 RESIDENTIAL WELL AND EH-100 SERIES WELL SAMPLING ANALYTICAL PARAMETERS

Parameter	Analytical Technique	Analytical Method	Project Detection Limit (ppm)
[illegible]			
PH	PH Meter	SM 4500H-B	
Specific Conductivity	SC Meter	SM 2510 B	
TDS	Gravimetric	SM 2540C	10
TSS	Gravimetric	SM 2540D	10
[illegible]			
Alkalinity	Titrimetric	SM 2320B	1
Bicarbonate	Titrimetric	SM 2320B	1
Sulfate	Turbidimetric	SM 4500S04 E	1
Chloride	Colorimetric	SM 4500 CL C	1
Calcium	ICP	E200.7	5
Magnesium	ICP	E200.7	5
Sodium	ICP	E200.7	5
Potassium	ICP	E200.7	5
[illegible]			
Arsenic	ICP ICP-MS	200.7 200.8	0.005 (0.002 for residential samples)
Cadmium	ICP ICP-MS	200.7 200.8	0.001
Copper	ICP ICP-MS	200.7 200.8	0.004
Iron	ICP ICP-MS	200.7 200.8	0.020
Manganese	ICP ICP-MS	200.7 200.8	0.015
Lead	ICP ICP-MS	200.7 200.8	0.005
Selenium	ICP ICP-MS	200.7 200.8	0.005
Zinc	ICP ICP-MS	200.7 200.8	0.020
[illegible]			
SWL	Electric Tape	HF-SOP-10	0.01 ft
Temperature	PH Meter	HF-SOP-20	NA
Dissolved Oxygen (DO)	DO Meter	HF-SOP-22	NA
PH	pH Meter	HF-SOP-20	NA
Specific Conductivity (SC)	SC Meter	HF-SOP-79	NA

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

September 12, 2007

Energy Laboratories, Inc
Helena, MT 59601

RE: Asarco East Helena Bi-monthly Monitoring & Slurry Wall Groundwater Samples

Dear Energy Labs:

Enclosed are 12 ground water samples with identification codes AEH-0709-141 through -152, collected at the Asarco East Helena plant site on September 12, 2007. Samples should be analyzed for parameters per the chain-of-custody and following attached parameter list: Table B, Slurry Wall. Arsenic speciation samples need to be shipped priority overnight to your Casper lab to be analyzed within 30 hrs of sampling.

The data reports and invoices for analytical work should be directed to Bob Miller at Asarco Consulting, Inc. in Tacoma, Washington. Feel free to call Greg Bryce (406-443-4150 x155) if you have any questions about the samples.

Sincerely,

Greg Bryce
Chemist

Enclosures

K:\PROJECT\1054\10708 labcoverGW.DOC

Energy Laboratories Inc
Workorder Receipt Checklist

H07090115

Asarco Consulting

Login completed by: Roxanne L. Tubbs

Reviewed by: [illegible]

Reviewed Date: 9/14/07

Date and Time Received: 9/12/2007 3:23 PM

Received by: abb

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.0°C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

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877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

ANALYTICAL SUMMARY REPORT

October 05, 2007

Asarco Consulting
5219 N Shirley Street
Ruston, WA 98407

Workorder No.: H07090135

Project Name: 1054 Asarco E. Helena

Energy Laboratories Inc received the following 14 samples from Asarco Consulting on 9/13/2007 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H07090135-001	AEH-0709-153	09/13/07 9:15	09/13/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity pH Solids, Total Dissolved Solids, Total Suspended Sulfate
H07090135-002	AEH-0709-154	09/13/07 9:25	09/13/07	Aqueous	Same As Above
H07090135-003	AEH-0709-155	09/13/07 9:50	09/13/07	Aqueous	Same As Above
H07090135-004	AEH-0709-156	09/13/07 10:00	09/13/07	Aqueous	Same As Above
H07090135-005	AEH-0709-157	09/13/07 10:45	09/13/07	Aqueous	Same As Above
H07090135-006	AEH-0709-158	09/13/07 10:30	09/13/07	Aqueous	Same As Above
H07090135-007	AEH-0709-159	09/13/07 11:00	09/13/07	Aqueous	Same As Above
H07090135-008	AEH-0709-160	09/13/07 11:30	09/13/07	Aqueous	Same As Above
H07090135-009	AEH-0709-161	09/13/07 13:10	09/13/07	Aqueous	Metals by ICP/ICPMS, Dissolved Metals by ICP/ICPMS, Total Alkalinity Chloride Conductivity Arsenic Speciation Metals by ICP, Dissolved pH Metals Digestion by EPA 200.2 Solids, Total Dissolved Solids, Total Suspended Sulfate
H07090135-010	AEH-0709-162	09/13/07 13:55	09/13/07	Aqueous	Same As Above
H07090135-011	AEH-0709-163	09/13/07 14:30	09/13/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity pH Solids, Total Dissolved Solids, Total Suspended Sulfate

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H07090135-012	ERA Standard 506 (Minerals)	09/13/07 14:30 09/13/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity Solids, Total Dissolved Sulfate
H07090135-013	ERA Standard 507 (Hardness)	09/13/07 14:30 09/13/07	Aqueous	Metals by ICP/ICPMS, Dissolved Solids, Total Suspended
H07090135-014	ERA Standard 740 (Trace Metals)	09/13/07 14:30 09/13/07	Aqueous	Metals by ICP/ICPMS, Total Metals Digestion by EPA 200.2

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT, EPA # MT00005
eli-c - Energy Laboratories, Inc. - Casper, WY, EPA# WY00002
eli-f - Energy Laboratories, Inc. - Idaho Falls, ID, EPA # ID00942
eli-g - Energy Laboratories, Inc. - Gillette, WY, EPA# WY00006
eli-h - Energy Laboratories, Inc. - Helena, MT, EPA# MT00945
eli-r - Energy Laboratories, Inc. - Rapid City, SD, EPA# SD00012
eli-t - Energy Laboratories, Inc. - College Station, TX, EPA# TX01520

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES, INC. will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories are indicated within the Laboratory Analytical Report.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
Temperature of samples received may not be considered properly preserved by accepted standards. Samples that are hand delivered immediately after collection shall be considered acceptable if there is evidence that the chilling process has begun.

ELI appreciates the opportunity to provide you with this analytical service. For additional information, including certifications, and analytical services visit our web page www.energylab.com.

Report Approved By: Jonathan Hager

Jonathan Hager
Assistant Lab Manager

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H07090135-012	ERA Standard 506 (Minerals)	09/13/07 14:30 09/13/07	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Chloride Conductivity Solids, Total Dissolved Sulfate
H07090135-013	ERA Standard 507 (Hardness)	09/13/07 14:30 09/13/07	Aqueous	Metals by ICP/ICPMS, Dissolved Solids, Total Suspended
H07090135-014	ERA Standard 740 (Trace Metals)	09/13/07 14:30 09/13/07	Aqueous	Metals by ICP/ICPMS, Total Metals Digestion by EPA 200.2

BRANCH LABORATORY LOCATIONS
eli-b - Energy Laboratories, Inc. - Billings, MT, EPA # MT00005
eli-c - Energy Laboratories, Inc. - Casper, WY, EPA# WY00002
eli-f - Energy Laboratories, Inc. - Idaho Falls, ID, EPA # ID00942
eli-g - Energy Laboratories, Inc. - Gillette, WY, EPA# WY00006
eli-h - Energy Laboratories, Inc. - Helena, MT, EPA# MT00945
eli-r - Energy Laboratories, Inc. - Rapid City, SD, EPA# SD00012
eli-t - Energy Laboratories, Inc. - College Station, TX, EPA# TX01520

SUBCONTRACTING ANALYSIS
Subcontracting of sample analyses to an outside laboratory may be required. If so, ENERGY LABORATORIES, INC. will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories are indicated within the Laboratory Analytical Report.

SAMPLE TEMPERATURE COMPLIANCE: 4°C (±2°C)
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Report Approved By: Jonathan Hager
Jonathan Hager
Assistant Lab Manager

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CASE NARRATIVE

NONE

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 3161 East Lyndale Ave. • Helena, MT 59604
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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-001
Client Sample ID: AEH-0709-153

Report Date: 10/04/07
Collection Date: 09/13/07 09:15
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.7	s.u.		0.1		A4500-H B	09/14/07 13:13 / sld
Conductivity	1560	umhos/cm		1		A2510 B	09/14/07 16:05 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:26 / abb
Solids, Total Dissolved TDS @ 180 C	1100	mg/L		10		A2540 C	09/18/07 13:11 / abb
INORGANICS							
Sulfate	413	mg/L	D	6		A4500-SO4 E	09/17/07 14:52 / abb
Alkalinity, Total as CaCO3	250	mg/L		1		A2320 B	09/19/07 14:35 / abb
Bicarbonate as HCO3	310	mg/L		1		A2320 B	09/19/07 14:35 / abb
Chloride	90	mg/L		1		A4500-Cl C	09/18/07 14:06 / sld
METALS, DISSOLVED							
Arsenic	7.145	mg/L		0.002		E200.8	09/21/07 07:33 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/21/07 07:33 / eli-b
Calcium	95	mg/L		1		E200.7	09/20/07 14:06 / eli-b
Copper	0.005	mg/L		0.004		E200.8	09/21/07 07:33 / eli-b
Iron	0.12	mg/L		0.02		E200.7	09/20/07 14:06 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 07:33 / eli-b
Magnesium	26	mg/L		1		E200.7	09/20/07 14:06 / eli-b
Manganese	8.32	mg/L		0.01		E200.7	09/20/07 14:06 / eli-b
Potassium	12	mg/L		1		E200.7	09/20/07 14:06 / eli-b
Selenium	0.012	mg/L		0.005		E200.8	09/27/07 18:26 / eli-b
Sodium	242	mg/L		1		E200.7	09/21/07 12:32 / eli-b
Zinc	0.01	mg/L		0.01		E200.8	09/27/07 03:38 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-002
Client Sample ID: AEH-0709-154

Report Date: 10/04/07
Collection Date: 09/13/07 09:25
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.8	s.u.		0.1		A4500-H B	09/14/07 13:14 / sld
Conductivity	1560	umhos/cm		1		A2510 B	09/14/07 16:06 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:26 / abb
Solids, Total Dissolved TDS @ 180 C	1110	mg/L		10		A2540 C	09/18/07 13:11 / abb
INORGANICS							
Sulfate	401	mg/L	D	6		A4500-SO4 E	09/17/07 14:52 / abb
Alkalinity, Total as CaCO3	260	mg/L		1		A2320 B	09/19/07 14:40 / abb
Bicarbonate as HCO3	310	mg/L		1		A2320 B	09/19/07 14:40 / abb
Chloride	87	mg/L		1		A4500-Cl C	09/18/07 14:08 / sld
METALS, DISSOLVED							
Arsenic	7.145	mg/L		0.002		E200.8	09/21/07 08:34 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/21/07 08:34 / eli-b
Calcium	95	mg/L		1		E200.7	09/20/07 14:10 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/21/07 08:34 / eli-b
Iron	0.12	mg/L		0.02		E200.7	09/20/07 14:10 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 08:34 / eli-b
Magnesium	26	mg/L		1		E200.7	09/20/07 14:10 / eli-b
Manganese	8.27	mg/L		0.01		E200.7	09/20/07 14:10 / eli-b
Potassium	12	mg/L		1		E200.7	09/20/07 14:10 / eli-b
Selenium	0.013	mg/L		0.005		E200.8	09/27/07 18:34 / eli-b
Sodium	240	mg/L		1		E200.7	09/21/07 12:36 / eli-b
Zinc	0.01	mg/L		0.01		E200.7	09/21/07 12:36 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-003
Client Sample ID: AEH-0709-155

Report Date: 10/04/07
Collection Date: 09/13/07 09:50
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.4	s.u.		0.1		A4500-H B	09/14/07 13:16 / sld
Conductivity	1580	umhos/cm		1		A2510 B	09/14/07 16:08 / kjw
Solids, Total Suspended TSS @ 105 C	94	mg/L		10		A2540 D	09/18/07 13:26 / abb
Solids, Total Dissolved TDS @ 180 C	1180	mg/L		10		A2540 C	09/18/07 13:11 / abb
INORGANICS							
Sulfate	503	mg/L	D	6		A4500-SO4 E	09/17/07 14:53 / abb
Alkalinity, Total as CaCO3	150	mg/L		1		A2320 B	09/19/07 14:43 / abb
Bicarbonate as HCO3	190	mg/L		1		A2320 B	09/19/07 14:43 / abb
Chloride	82	mg/L		1		A4500-Cl C	09/18/07 14:10 / sld
METALS, DISSOLVED							
Arsenic	12.08	mg/L		0.002		E200.8	09/21/07 08:58 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/21/07 08:58 / eli-b
Calcium	92	mg/L		1		E200.7	09/20/07 14:14 / eli-b
Copper	0.005	mg/L		0.004		E200.8	09/21/07 08:58 / eli-b
Iron	0.05	mg/L		0.02		E200.7	09/20/07 14:14 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 08:58 / eli-b
Magnesium	29	mg/L		1		E200.7	09/20/07 14:14 / eli-b
Manganese	16.08	mg/L		0.01		E200.7	09/20/07 14:14 / eli-b
Potassium	12	mg/L		1		E200.7	09/20/07 14:14 / eli-b
Selenium	0.128	mg/L		0.005		E200.8	09/27/07 18:41 / eli-b
Sodium	237	mg/L		1		E200.7	09/21/07 12:47 / eli-b
Zinc	0.09	mg/L		0.01		E200.7	09/21/07 12:47 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-004
Client Sample ID: AEH-0709-156

Report Date: 10/04/07
Collection Date: 09/13/07 10:00
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	4.8	s.u.		0.1		A4500-H B	09/14/07 13:17 / sld
Conductivity	16	umhos/cm		1		A2510 B	09/14/07 16:10 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:27 / abb
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	09/18/07 13:12 / abb
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/17/07 14:54 / abb
Alkalinity, Total as CaCO3	2	mg/L		1		A2320 B	09/19/07 14:45 / abb
Bicarbonate as HCO3	2	mg/L		1		A2320 B	09/19/07 14:45 / abb
Chloride	ND	mg/L		1		A4500-Cl C	09/18/07 14:11 / sld
METALS, DISSOLVED							
Arsenic	ND	mg/L		0.002		E200.8	10/01/07 16:07 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/21/07 09:05 / eli-b
Calcium	ND	mg/L		1		E200.7	09/20/07 14:18 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/27/07 18:49 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/20/07 14:18 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 09:05 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/20/07 14:18 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/20/07 14:18 / eli-b
Potassium	ND	mg/L		1		E200.7	09/20/07 14:18 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/27/07 18:49 / eli-b
Sodium	2	mg/L		1		E200.7	09/21/07 12:51 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/20/07 14:18 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-005
Client Sample ID: AEH-0709-157

Report Date: 10/04/07
Collection Date: 09/13/07 10:45
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.8	s.u.		0.1		A4500-H B	09/14/07 13:20 / sld
Conductivity	1540	umhos/cm		1		A2510 B	09/14/07 16:11 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:28 / abb
Solids, Total Dissolved TDS @ 180 C	1130	mg/L		10		A2540 C	09/18/07 13:12 / abb
INORGANICS							
Sulfate	456	mg/L	D	6		A4500-SO4 E	09/17/07 14:54 / abb
Alkalinity, Total as CaCO3	220	mg/L		1		A2320 B	09/19/07 14:50 / abb
Bicarbonate as HCO3	270	mg/L		1		A2320 B	09/19/07 14:50 / abb
Chloride	57	mg/L		1		A4500-Cl C	09/18/07 14:13 / sld
METALS, DISSOLVED							
Arsenic	14.13	mg/L		0.002		E200.8	09/21/07 09:13 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/21/07 09:13 / eli-b
Calcium	82	mg/L		1		E200.7	09/20/07 14:21 / eli-b
Copper	0.005	mg/L		0.004		E200.8	09/21/07 09:13 / eli-b
Iron	0.07	mg/L		0.02		E200.7	09/20/07 14:21 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 09:13 / eli-b
Magnesium	22	mg/L		1		E200.7	09/20/07 14:21 / eli-b
Manganese	9.14	mg/L		0.01		E200.8	09/21/07 09:13 / eli-b
Potassium	11	mg/L		1		E200.7	09/20/07 14:21 / eli-b
Selenium	0.019	mg/L		0.005		E200.8	09/27/07 18:56 / eli-b
Sodium	257	mg/L		1		E200.7	09/21/07 12:55 / eli-b
Zinc	0.58	mg/L		0.01		E200.7	09/21/07 12:55 / eli-b

Report Definitions:
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QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-006
Client Sample ID: AEH-0709-158

Report Date: 10/04/07
Collection Date: 09/13/07 10:30
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	4.9	s.u.		0.1		A4500-H B	09/14/07 13:21 / sld
Conductivity	15	umhos/cm		1		A2510 B	09/14/07 16:12 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:29 / abb
Solids, Total Dissolved TDS @ 180 C	ND	mg/L		10		A2540 C	09/18/07 13:12 / abb
INORGANICS							
Sulfate	ND	mg/L		1		A4500-SO4 E	09/17/07 14:55 / abb
Alkalinity, Total as CaCO3	ND	mg/L		1		A2320 B	09/19/07 14:58 / abb
Bicarbonate as HCO3	ND	mg/L		1		A2320 B	09/19/07 14:58 / abb
Chloride	ND	mg/L		1		A4500-Cl C	09/18/07 14:21 / sld
METALS, DISSOLVED							
Arsenic	0.002	mg/L		0.002		E200.8	10/01/07 15:59 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/21/07 09:20 / eli-b
Calcium	ND	mg/L		1		E200.7	09/20/07 14:33 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/21/07 09:20 / eli-b
Iron	ND	mg/L		0.02		E200.7	09/20/07 14:33 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 09:20 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/20/07 14:33 / eli-b
Manganese	ND	mg/L		0.01		E200.7	09/20/07 14:33 / eli-b
Potassium	ND	mg/L		1		E200.7	09/20/07 14:33 / eli-b
Selenium	ND	mg/L		0.005		E200.8	09/27/07 19:04 / eli-b
Sodium	2	mg/L		1		E200.7	09/21/07 12:58 / eli-b
Zinc	ND	mg/L		0.01		E200.7	09/20/07 14:33 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-007
Client Sample ID: AEH-0709-159

Report Date: 10/04/07
Collection Date: 09/13/07 11:00
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.6	s.u.		0.1		A4500-H B	09/14/07 13:23 / sld
Conductivity	598	umhos/cm		1		A2510 B	09/14/07 16:14 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:29 / abb
Solids, Total Dissolved TDS @ 180 C	392	mg/L		10		A2540 C	09/18/07 13:13 / abb
INORGANICS							
Sulfate	128	mg/L		1		A4500-SO4 E	09/17/07 14:55 / abb
Alkalinity, Total as CaCO3	110	mg/L		1		A2320 B	09/19/07 15:02 / abb
Bicarbonate as HCO3	140	mg/L		1		A2320 B	09/19/07 15:02 / abb
Chloride	10	mg/L		1		A4500-Cl C	09/18/07 14:21 / sld
METALS, DISSOLVED							
Arsenic	14.16	mg/L		0.002		E200.8	09/21/07 09:28 / eli-b
Cadmium	0.074	mg/L		0.001		E200.8	09/21/07 09:28 / eli-b
Calcium	53	mg/L		1		E200.7	09/20/07 14:37 / eli-b
Copper	0.004	mg/L		0.004		E200.8	09/21/07 09:28 / eli-b
Iron	0.55	mg/L		0.02		E200.7	09/20/07 14:37 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 09:28 / eli-b
Magnesium	8	mg/L		1		E200.7	09/20/07 14:37 / eli-b
Manganese	1.92	mg/L		0.01		E200.8	09/21/07 09:28 / eli-b
Potassium	20	mg/L		1		E200.7	09/20/07 14:37 / eli-b
Selenium	0.007	mg/L		0.005		E200.8	09/27/07 19:12 / eli-b
Sodium	50	mg/L		1		E200.7	09/21/07 13:02 / eli-b
Zinc	0.23	mg/L		0.01		E200.7	09/21/07 13:02 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-008
Client Sample ID: AEH-0709-160

Report Date: 10/04/07
Collection Date: 09/13/07 11:30
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.9	s.u.		0.1		A4500-H B	09/14/07 13:24 / sld
Conductivity	1890	umhos/cm		1		A2510 B	09/14/07 16:16 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:29 / abb
Solids, Total Dissolved TDS @ 180 C	1320	mg/L		10		A2540 C	09/18/07 13:13 / abb
INORGANICS							
Sulfate	494	mg/L	D	6		A4500-SO4 E	09/17/07 14:55 / abb
Alkalinity, Total as CaCO3	300	mg/L		1		A2320 B	09/19/07 15:08 / abb
Bicarbonate as HCO3	360	mg/L		1		A2320 B	09/19/07 15:08 / abb
Chloride	47	mg/L		1		A4500-Cl C	09/18/07 14:24 / sld
METALS, DISSOLVED							
Arsenic	32.6	mg/L	D	0.1		E200.7	09/21/07 13:06 / eli-b
Cadmium	0.017	mg/L		0.001		E200.8	09/21/07 09:36 / eli-b
Calcium	36	mg/L		1		E200.7	09/20/07 14:40 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/21/07 09:36 / eli-b
Iron	1.58	mg/L		0.02		E200.7	09/20/07 14:40 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 09:36 / eli-b
Magnesium	12	mg/L		1		E200.7	09/20/07 14:40 / eli-b
Manganese	2.55	mg/L		0.01		E200.8	09/21/07 09:36 / eli-b
Potassium	13	mg/L		1		E200.7	09/20/07 14:40 / eli-b
Selenium	0.015	mg/L		0.005		E200.8	09/27/07 19:19 / eli-b
Sodium	396	mg/L		1		E200.7	09/21/07 13:06 / eli-b
Zinc	0.41	mg/L		0.01		E200.7	09/21/07 13:06 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-009
Client Sample ID: AEH-0709-161

Report Date: 10/04/07
Collection Date: 09/13/07 13:10
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.5	s.u.		0.1		A4500-H B	09/14/07 13:25 / sld
Conductivity	2450	umhos/cm		1		A2510 B	09/14/07 16:17 / kjw
Solids, Total Suspended TSS @ 105 C	259	mg/L		10		A2540 D	09/18/07 13:30 / abb
Solids, Total Dissolved TDS @ 180 C	1870	mg/L		10		A2540 C	09/18/07 13:13 / abb
INORGANICS							
Sulfate	1030	mg/L	D	30		A4500-SO4 E	09/17/07 14:56 / abb
Alkalinity, Total as CaCO3	110	mg/L		1		A2320 B	09/19/07 15:14 / abb
Bicarbonate as HCO3	140	mg/L		1		A2320 B	09/19/07 15:14 / abb
Chloride	135	mg/L		1		A4500-Cl C	09/18/07 14:25 / sld
METALS, DISSOLVED							
Arsenic	25.9	mg/L	D	0.4		E200.7	09/21/07 13:17 / eli-b
Cadmium	0.025	mg/L		0.001		E200.8	09/21/07 05:45 / eli-b
Calcium	192	mg/L		1		E200.7	09/20/07 14:44 / eli-b
Copper	ND	mg/L		0.004		E200.8	09/21/07 05:45 / eli-b
Iron	65.69	mg/L	D	0.03		E200.7	09/20/07 14:44 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 05:45 / eli-b
Magnesium	64	mg/L		1		E200.7	09/20/07 14:44 / eli-b
Manganese	22.66	mg/L		0.01		E200.8	09/21/07 05:45 / eli-b
Potassium	36	mg/L		1		E200.7	09/20/07 14:44 / eli-b
Sodium	210	mg/L		1		E200.7	09/21/07 13:17 / eli-b
Zinc	24.46	mg/L		0.01		E200.8	09/21/07 05:45 / eli-b
METALS, TOTAL							
Arsenic	37.2	mg/L	D	0.02		E200.7	09/21/07 13:30 / eli-b
Cadmium	0.311	mg/L		0.001		E200.8	09/21/07 05:53 / eli-b
Copper	0.008	mg/L		0.004		E200.8	09/21/07 05:53 / eli-b
Iron	82.5	mg/L	D	0.02		E200.7	09/21/07 13:30 / eli-b
Lead	0.057	mg/L		0.005		E200.8	09/21/07 05:53 / eli-b
Manganese	23.8	mg/L		0.01		E200.8	09/21/07 05:53 / eli-b
Zinc	27.6	mg/L		0.01		E200.8	09/22/07 11:36 / eli-b
METALS - SPECIATED							
Arsenic-III	22000	ug/L	D	141		E1632AM	09/15/07 00:00 / eli-c
Arsenic-V	2510	ug/L	D	125		E1632AM	09/15/07 00:00 / eli-c

Report Definitions:
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QCL - Quality control limit.
D - RL increased due to sample matrix interference.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-010
Client Sample ID: AEH-0709-162

Report Date: 10/04/07
Collection Date: 09/13/07 13:55
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	6.8	s.u.		0.1		A4500-H B	09/14/07 13:26 / sld
Conductivity	6450	umhos/cm		1		A2510 B	09/14/07 16:19 / kjw
Solids, Total Suspended TSS @ 105 C	501	mg/L		10		A2540 D	09/18/07 13:30 / abb
Solids, Total Dissolved TDS @ 180 C	3550	mg/L		10		A2540 C	09/18/07 13:13 / abb
INORGANICS							
Sulfate	1550	mg/L	D	30		A4500-SO4 E	09/17/07 14:56 / abb
Alkalinity, Total as CaCO3	1100	mg/L		1		A2320 B	09/19/07 15:21 / abb
Bicarbonate as HCO3	1300	mg/L		1		A2320 B	09/19/07 15:21 / abb
Chloride	112	mg/L		1		A4500-Cl C	09/18/07 14:44 / sld
METALS, DISSOLVED							
Arsenic	78.1	mg/L	D	0.7		E200.7	09/21/07 13:21 / eli-b
Cadmium	ND	mg/L		0.001		E200.8	09/21/07 06:00 / eli-b
Calcium	628	mg/L	D	2		E200.7	09/20/07 14:55 / eli-b
Copper	0.005	mg/L		0.004		E200.8	09/21/07 06:00 / eli-b
Iron	199.0	mg/L	D	0.05		E200.7	09/20/07 14:55 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/21/07 06:00 / eli-b
Magnesium	179	mg/L		1		E200.7	09/20/07 14:55 / eli-b
Manganese	18.34	mg/L		0.01		E200.7	09/20/07 14:55 / eli-b
Potassium	43	mg/L		1		E200.7	09/20/07 14:55 / eli-b
Selenium	0.023	mg/L		0.005		E200.8	09/21/07 06:00 / eli-b
Sodium	267	mg/L	D	2		E200.7	09/21/07 13:21 / eli-b
Zinc	0.06	mg/L		0.01		E200.8	09/21/07 06:00 / eli-b
METALS, TOTAL							
Arsenic	63.7	mg/L	D	0.05		E200.7	09/21/07 13:34 / eli-b
Cadmium	0.011	mg/L		0.001		E200.8	09/21/07 06:08 / eli-b
Copper	0.013	mg/L		0.004		E200.8	09/21/07 06:08 / eli-b
Iron	179	mg/L	D	0.05		E200.7	09/21/07 13:34 / eli-b
Lead	0.056	mg/L		0.005		E200.8	09/21/07 06:08 / eli-b
Manganese	14.0	mg/L		0.01		E200.8	09/21/07 06:08 / eli-b
Zinc	0.18	mg/L		0.01		E200.8	09/21/07 06:08 / eli-b
METALS - SPECIATED							
Arsenic-III	42600	ug/L	D	565		E1632AM	09/15/07 00:00 / eli-c
Arsenic-V	21600	ug/L	D	499		E1632AM	09/15/07 00:00 / eli-c

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-011
Client Sample ID: AEH-0709-163

Report Date: 10/04/07
Collection Date: 09/13/07 14:30
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
pH	9.9	s.u.		0.1		A4500-H B	09/14/07 13:27 / sld
Conductivity	3490	umhos/cm		1		A2510 B	09/14/07 16:21 / kjw
Solids, Total Suspended TSS @ 105 C	ND	mg/L		10		A2540 D	09/18/07 13:30 / abb
Solids, Total Dissolved TDS @ 180 C	2600	mg/L		10		A2540 C	09/18/07 13:14 / abb
INORGANICS							
Sulfate	826	mg/L	D	30		A4500-SO4 E	09/17/07 14:57 / abb
Alkalinity, Total as CaCO3	1000	mg/L		1		A2320 B	09/19/07 15:37 / abb
Bicarbonate as HCO3	710	mg/L		1		A2320 B	09/19/07 15:37 / abb
Chloride	45	mg/L		1		A4500-Cl C	09/18/07 14:45 / sld
METALS, DISSOLVED							
Arsenic	165.8	mg/L	D	0.4		E200.7	09/21/07 13:32 / eli-b
Cadmium	0.002	mg/L		0.001		E200.8	09/27/07 19:27 / eli-b
Calcium	2	mg/L		1		E200.7	09/20/07 14:59 / eli-b
Copper	0.007	mg/L		0.004		E200.8	09/27/07 19:27 / eli-b
Iron	0.21	mg/L	D	0.03		E200.7	09/20/07 14:59 / eli-b
Lead	ND	mg/L		0.005		E200.8	09/27/07 19:27 / eli-b
Magnesium	ND	mg/L		1		E200.7	09/20/07 14:59 / eli-b
Manganese	0.02	mg/L		0.01		E200.7	09/20/07 14:59 / eli-b
Potassium	9	mg/L		1		E200.7	09/20/07 14:59 / eli-b
Selenium	0.024	mg/L		0.005		E200.8	09/27/07 19:27 / eli-b
Sodium	924	mg/L		1		E200.7	09/21/07 13:32 / eli-b
Zinc	0.05	mg/L		0.01		E200.7	09/20/07 14:59 / eli-b

Report Definitions:
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MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-012
Client Sample ID: ERA Standard 506 (Minerals)

Report Date: 10/04/07
Collection Date: 09/13/07 14:30
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Conductivity	599	umhos/cm		1		A2510 B	09/25/07 10:41 / abb
Solids, Total Dissolved TDS @ 180 C	331	mg/L		10		A2540 C	09/18/07 13:14 / abb
INORGANICS							
Sulfate	34	mg/L		1		A4500-SO4 E	09/17/07 14:57 / abb
Alkalinity, Total as CaCO3	33	mg/L		1		A2320 B	09/19/07 15:41 / abb
Bicarbonate as HCO3	38	mg/L		1		A2320 B	09/19/07 15:41 / abb
Chloride	122	mg/L		1		A4500-Cl C	09/18/07 14:48 / sld
METALS, DISSOLVED							
Potassium	36	mg/L		1		E200.7	09/20/07 15:03 / eli-b
Sodium	95	mg/L		1		E200.7	09/21/07 13:36 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-013
Client Sample ID: ERA Standard 507 (Hardness)

Report Date: 10/04/07
Collection Date: 09/13/07 14:30
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL PROPERTIES							
Solids, Total Suspended TSS @ 105 C	60	mg/L		10		A2540 D	09/18/07 13:31 / abb
METALS, DISSOLVED							
Calcium	26	mg/L		1		E200.7	09/20/07 15:06 / eli-b
Magnesium	32	mg/L		1		E200.7	09/20/07 15:06 / eli-b

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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LABORATORY ANALYTICAL REPORT

Client: Asarco Consulting
Project: 1054 Asarco E. Helena
Lab ID: H07090135-014
Client Sample ID: ERA Standard 740 (Trace Metals)

Report Date: 10/04/07
Collection Date: 09/13/07 14:30
DateReceived: 09/13/07
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
METALS, TOTAL							
Arsenic	0.488	mg/L		0.002		E200.8	09/21/07 10:22 / eli-b
Cadmium	0.393	mg/L		0.001		E200.8	09/21/07 10:22 / eli-b
Copper	0.580	mg/L		0.004		E200.7	09/20/07 21:41 / eli-b
Iron	0.37	mg/L		0.02		E200.7	09/20/07 21:41 / eli-b
Lead	0.724	mg/L		0.005		E200.8	09/21/07 10:22 / eli-b
Manganese	2.60	mg/L		0.01		E200.8	09/21/07 10:22 / eli-b
Zinc	0.78	mg/L		0.01		E200.8	09/21/07 10:22 / eli-b

Report Definitions:
RL - Analyte reporting limit.
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MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B								Analytical Run: TITTR_070919A	
Sample ID: CCV1_070919A	Continuing Calibration Verification Standard							09/19/07 14:54	
Alkalinity, Total as CaCO3	1100	mg/L	4.0	107	90	110			
Bicarbonate as HCO3	10	mg/L	4.0		0	0			
Method: A2320 B								Batch: 070919A-ALK-W	
Sample ID: MBLK1_070919A	Method Blank				Run: TITTR_070919A			09/19/07 13:52	
Alkalinity, Total as CaCO3	ND	mg/L	1						
Bicarbonate as HCO3	ND	mg/L	1						
Sample ID: LCS1_070919A	Laboratory Control Sample				Run: TITTR_070919A			09/19/07 13:56	
Alkalinity, Total as CaCO3	600	mg/L	4.0	100	90	110			
Sample ID: H07090115-012AMS	Sample Matrix Spike				Run: TITTR_070919A			09/19/07 14:23	
Alkalinity, Total as CaCO3	580	mg/L	4.0	97	90	110			
Sample ID: H07090115-012AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070919A			09/19/07 14:28	
Alkalinity, Total as CaCO3	580	mg/L	4.0	97	90	110	0.2	20	
Sample ID: H07090135-010ADUP	Sample Duplicate				Run: TITTR_070919A			09/19/07 15:25	
Alkalinity, Total as CaCO3	1100	mg/L	4.0				3.1	20	
Bicarbonate as HCO3	1400	mg/L	4.0				3.1	20	
Method: A2510 B								Batch: 070914A-COND-PROBE-W	
Sample ID: LCS1_070914A	Laboratory Control Sample				Run: COND_070914B			09/14/07 15:38	
Conductivity	726	umhos/cm	1.0	101	90	110			
Sample ID: H07090135-008ADUP	Sample Duplicate				Run: COND_070914B			09/14/07 16:16	
Conductivity	1880	umhos/cm	1.0				0.7	10	
Method: A2510 B								Batch: 070925A-COND-PROBE-W	
Sample ID: LCS1_070925A	Laboratory Control Sample				Run: COND_070925A			09/25/07 10:40	
Conductivity	715	umhos/cm	1.0	100	90	110			
Sample ID: H07090252-002ADUP	Sample Duplicate				Run: COND_070925A			09/25/07 10:44	
Conductivity	945	umhos/cm	1.0				0.0	10	

Qualifiers:

RL - Analyte reporting limit.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C								Batch: 070918A-SLDS-TDS-W	
Sample ID: MBLK1_070918A	Method Blank				Run: SOLIDS_070918B			09/18/07 13:04	
Solids, Total Dissolved TDS @ 180 C	ND	mg/L	1.0						
Sample ID: H07090121-006DDUP	Sample Duplicate				Run: SOLIDS_070918B			09/18/07 13:11	
Solids, Total Dissolved TDS @ 180 C	245	mg/L	10				2.9	20	
Method: A2540 D								Batch: 070918A-SLDS-TSS-W	
Sample ID: LCS1_070918A	Laboratory Control Sample				Run: SOLIDS_070918A			09/18/07 13:20	
Solids, Total Suspended TSS @ 105 C	2080	mg/L	10	104	70	130			
Sample ID: H07090135-005ADUP	Sample Duplicate				Run: SOLIDS_070918A			09/18/07 13:28	
Solids, Total Suspended TSS @ 105 C	1.00	mg/L	10				0.0	10	
Method: A4500-Cl C								Batch: 070918A-CL-TTR-W	
Sample ID: MBLK1_070918A	Method Blank				Run: TITTR_070918A			09/18/07 11:41	
Chloride	ND	mg/L	0.7						
Sample ID: LCS1_070918A	Laboratory Control Sample				Run: TITTR_070918A			09/18/07 11:42	
Chloride	105	mg/L	1.0	105	90	110			
Sample ID: H07090121-006DMS	Sample Matrix Spike				Run: TITTR_070918A			09/18/07 14:02	
Chloride	26.5	mg/L	1.0	90	90	110			
Sample ID: H07090121-006DMSD	Sample Matrix Spike Duplicate				Run: TITTR_070918A			09/18/07 14:04	
Chloride	26.0	mg/L	1.0	85	90	110	1.9	20	
Sample ID: H07090141-010AMS	Sample Matrix Spike				Run: TITTR_070918A			09/18/07 15:05	
Chloride	11.5	mg/L	1.0	100	90	110			
Sample ID: H07090141-010AMSD	Sample Matrix Spike Duplicate				Run: TITTR_070918A			09/18/07 15:07	
Chloride	10.5	mg/L	1.0	90	90	110	9.1	20	
Method: A4500-H B								Batch: 070914A-PH-W	
Sample ID: LCS1_070914A	Laboratory Control Sample				Run: PH_070914B			09/14/07 12:38	
pH	7.08	s.u.	0.10	101	98.6	101.4			
Sample ID: H07090135-008ADUP	Sample Duplicate				Run: PH_070914B			09/14/07 13:24	
pH	6.93	s.u.	0.10				0.3	2	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-SO4 E								Batch: 070917A-SO4-TURB-W	
Sample ID: MBLK1_070917A	Method Blank				Run: TURBIDITY_070917A			09/17/07 14:36	
Sulfate	ND	mg/L	0.6						
Sample ID: LCS1_070917A	Laboratory Control Sample				Run: TURBIDITY_070917A			09/17/07 14:37	
Sulfate	101	mg/L	1.1	101	90	110			
Sample ID: H07090115-012AMS	Sample Matrix Spike				Run: TURBIDITY_070917A			09/17/07 14:51	
Sulfate	18.0	mg/L	1.0	90	80	120			
Sample ID: H07090115-012AMSD	Sample Matrix Spike Duplicate				Run: TURBIDITY_070917A			09/17/07 14:52	
Sulfate	18.1	mg/L	1.0	91	80	120	0.6	10	
Sample ID: H07090135-005ADUP	Sample Duplicate				Run: TURBIDITY_070917A			09/17/07 14:54	
Sulfate	456	mg/L	5.6				0.0	20	
Method: E1632AM								Batch: C_R89790	
Sample ID: MBLK	Method Blank				Run: SUB-C89790			09/15/07 00:00	
Arsenic-III	ND	ug/L	0.3						
Arsenic-V	ND	ug/L	0.2						
Sample ID: C07090536-004DMS	Sample Matrix Spike				Run: SUB-C89790			09/15/07 00:00	
Arsenic-III	800	ug/L	2.8	70	80	120			S
Arsenic-V	590	ug/L	2.5	111	80	120			
- Matrix spike recoveries outside the acceptance criteria of 80 to 120 percent are considered matrix related, not system related. Reported values are within method specifications.									
Sample ID: C07090536-004DMSD	Sample Matrix Spike Duplicate				Run: SUB-C89790			09/15/07 00:00	
Arsenic-III	820	ug/L	2.8	73	80	120	1.9	20	S
Arsenic-V	540	ug/L	2.5	101	80	120	8.9	20	
- Matrix spike duplicate recoveries outside the acceptance criteria of 80 to 120 percent are considered matrix related, not system related. Reported values are within method specifications.									
Sample ID: 301-57-6	Laboratory Control Sample				Run: SUB-C89790			09/15/07 00:00	
Arsenic-III	47	ug/L	1.0	93	80	120			
Arsenic-V	51	ug/L	1.0	103	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: B_28872
Sample ID: MB-28872	Method Blank				Run: SUB-B99739				09/21/07 01:16
Arsenic	ND	mg/L	0.01						
Iron	ND	mg/L	0.01						
Sample ID: LCS1-28872	Laboratory Control Sample				Run: SUB-B99739				09/21/07 01:19
Arsenic	0.09388	mg/L	0.010	94	85	115			
Iron	0.5170	mg/L	0.030	103	85	115			
Sample ID: B07091481-002BMS1	Sample Matrix Spike				Run: SUB-B99739				09/21/07 01:37
Arsenic	0.9800	mg/L	0.0050	98	70	130			
Iron	5.100	mg/L	0.030	102	70	130			
Sample ID: B07091481-002BMSD1	Sample Matrix Spike Duplicate				Run: SUB-B99739				09/21/07 01:41
Arsenic	1.001	mg/L	0.0050	100	70	130	2.1	20	
Iron	5.270	mg/L	0.030	105	70	130	3.3	20	
Sample ID: B07091481-004BMS3	Sample Matrix Spike				Run: SUB-B99739				09/21/07 01:48
Iron	1520	mg/L	0.050		70	130			A
Sample ID: B07091481-004BMSD3	Sample Matrix Spike Duplicate				Run: SUB-B99739				09/21/07 01:51
Iron	1500	mg/L	0.050		70	130	1.3	20	A
Sample ID: MB-28872	Method Blank				Run: SUB-B99762				09/21/07 11:11
Arsenic	ND	mg/L	0.01						
Iron	0.07	mg/L	0.01						

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: SUB-B99739	
Sample ID: QCS	Initial Calibration Verification Standard							09/20/07 17:41	
Copper	0.974	mg/L	0.010	97	90	110			
Iron	4.96	mg/L	0.030	99	90	110			
Method: E200.7								Batch: B_R99739	
Sample ID: MB-SPDIS070919A	Method Blank				Run: SUB-B99739			09/20/07 18:29	
Copper	ND	mg/L	0.001						
Iron	ND	mg/L	0.002						
Sample ID: LFB-SPDIS070919A	Laboratory Fortified Blank				Run: SUB-B99739			09/20/07 18:32	
Copper	0.965	mg/L	0.010	96	85	115			
Iron	5.00	mg/L	0.030	100	85	115			
Sample ID: B07091414-004CMS2	Sample Matrix Spike				Run: SUB-B99739			09/20/07 21:05	
Copper	1.007	mg/L	0.010	101	70	130			
Iron	7.742	mg/L	0.030	103	70	130			
Sample ID: B07091414-004CMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99739			09/20/07 21:09	
Copper	1.019	mg/L	0.010	102	70	130	1.2	20	
Iron	7.742	mg/L	0.030	103	70	130	0.0	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: SUB-B99745	
Sample ID: QCS	Initial Calibration Verification Standard							09/20/07 11:03	
Calcium	49.2	mg/L	1.0	98	90	110			
Iron	4.95	mg/L	0.030	99	90	110			
Magnesium	49.4	mg/L	1.0	99	90	110			
Manganese	4.89	mg/L	0.010	98	90	110			
Potassium	49.3	mg/L	1.0	99	90	110			
Zinc	1.01	mg/L	0.010	101	90	110			
Method: E200.7								Batch: B_R99745	
Sample ID: MB-TJADIS070919A	Method Blank				Run: SUB-B99745			09/20/07 11:33	
Calcium	ND	mg/L	0.02						
Iron	ND	mg/L	0.005						
Magnesium	ND	mg/L	0.1						
Manganese	ND	mg/L	0.001						
Potassium	ND	mg/L	0.07						
Zinc	0.002	mg/L	0.001						
Sample ID: LFB-TJADIS070919A	Laboratory Fortified Blank				Run: SUB-B99745			09/20/07 11:36	
Calcium	50.4	mg/L	1.0	101	85	115			
Iron	5.00	mg/L	0.030	100	85	115			
Magnesium	50.1	mg/L	1.0	100	85	115			
Manganese	4.96	mg/L	0.010	99	85	115			
Potassium	49.7	mg/L	1.0	99	85	115			
Zinc	1.02	mg/L	0.010	102	85	115			
Sample ID: B07091606-011BMS2	Sample Matrix Spike				Run: SUB-B99745			09/20/07 13:52	
Calcium	1460	mg/L	4.4	108	70	130			
Iron	109.7	mg/L	0.11	109	70	130			
Magnesium	1261	mg/L	2.8	109	70	130			
Manganese	109.0	mg/L	0.023	108	70	130			
Potassium	1309	mg/L	1.3	112	70	130			
Zinc	22.46	mg/L	0.026	111	70	130			
Sample ID: B07091606-011BMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99745			09/20/07 13:55	
Calcium	1451	mg/L	4.4	107	70	130	0.6	20	
Iron	107.3	mg/L	0.11	107	70	130	2.3	20	
Magnesium	1240	mg/L	2.8	107	70	130	1.7	20	
Manganese	106.2	mg/L	0.023	105	70	130	2.6	20	
Potassium	1295	mg/L	1.3	110	70	130	1.1	20	
Zinc	21.88	mg/L	0.026	108	70	130	2.6	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: B_R99745
Sample ID: H07090135-009B	Sample Matrix Spike				Run: SUB-B99745				09/20/07 14:48
Calcium	459.9	mg/L	1.1	107	70	130			
Iron	91.75	mg/L	0.030	104	70	130			
Magnesium	336.4	mg/L	1.0	109	70	130			
Manganese	52.75	mg/L	0.010	104	70	130			
Potassium	306.5	mg/L	1.0	108	70	130			
Zinc	34.41	mg/L	0.010		70	130			A
Sample ID: H07090135-009B	Sample Matrix Spike Duplicate				Run: SUB-B99745				09/20/07 14:51
Calcium	470.0	mg/L	1.1	111	70	130	2.2	20	
Iron	93.27	mg/L	0.030	110	70	130	1.6	20	
Magnesium	342.1	mg/L	1.0	111	70	130	1.7	20	
Manganese	53.65	mg/L	0.010	108	70	130	1.7	20	
Potassium	304.3	mg/L	1.0	107	70	130	0.7	20	
Zinc	35.05	mg/L	0.010		70	130	1.8	20	A

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: SUB-B99817	
Sample ID: QCS	Initial Calibration Verification Standard							09/21/07 11:32	
Arsenic	0.980	mg/L	0.10	98	90	110			
Sodium	49.2	mg/L	1.0	98	90	110			
Zinc	0.997	mg/L	0.010	100	90	110			
Method: E200.7								Batch: B_R99817	
Sample ID: MB-TJADIS070921A	Method Blank				Run: SUB-B99817			09/21/07 12:02	
Arsenic	ND	mg/L	0.07						
Sodium	ND	mg/L	0.04						
Zinc	0.004	mg/L	0.001						
Sample ID: LFB-TJADIS070921A	Laboratory Fortified Blank				Run: SUB-B99817			09/21/07 12:06	
Arsenic	0.973	mg/L	0.10	97	85	115			
Sodium	49.5	mg/L	1.0	99	85	115			
Zinc	1.02	mg/L	0.010	101	85	115			
Sample ID: H07090135-008B	Sample Matrix Spike				Run: SUB-B99817			09/21/07 13:10	
Arsenic	35.17	mg/L	0.14		70	130			A
Sodium	500.5	mg/L	1.0	104	70	130			
Zinc	2.466	mg/L	0.010	103	70	130			
Sample ID: H07090135-008B	Sample Matrix Spike Duplicate				Run: SUB-B99817			09/21/07 13:13	
Arsenic	35.26	mg/L	0.14		70	130	0.2	20	A
Sodium	505.5	mg/L	1.0	109	70	130	1.0	20	
Zinc	2.497	mg/L	0.010	104	70	130	1.2	20	
Sample ID: B07091698-006BMS2	Sample Matrix Spike				Run: SUB-B99817			09/21/07 14:02	
Arsenic	9.865	mg/L	0.72	99	70	130			
Sodium	1419	mg/L	1.8	103	70	130			
Zinc	10.24	mg/L	0.013	101	70	130			
Sample ID: B07091698-006BMSD2	Sample Matrix Spike Duplicate				Run: SUB-B99817			09/21/07 14:06	
Arsenic	9.633	mg/L	0.72	96	70	130	2.4	20	
Sodium	1425	mg/L	1.8	104	70	130	0.5	20	
Zinc	10.25	mg/L	0.013	101	70	130	0.1	20	
Method: E200.7								Analytical Run: ICP1-HE_070913C	
Sample ID: CCV	Continuing Calibration Verification Standard							09/13/07 16:26	
Arsenic	0.954	mg/L	0.020	95	90	110			

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_28872
Sample ID: MB-28872	Method Blank				Run: SUB-B100042				09/26/07 17:04
Cadmium	0.0001	mg/L	9E-06						
Copper	8E-05	mg/L	7E-05						
Lead	5E-05	mg/L	8E-06						
Manganese	0.0002	mg/L	5E-05						
Zinc	0.0008	mg/L	3E-05						
Sample ID: MB-28872	Method Blank				Run: SUB-B99742				09/20/07 18:32
Cadmium	ND	mg/L	9E-06						
Copper	0.0001	mg/L	7E-05						
Lead	1E-05	mg/L	8E-06						
Manganese	0.0001	mg/L	5E-05						
Zinc	0.0007	mg/L	3E-05						
Sample ID: LCS1-28872	Laboratory Control Sample				Run: SUB-B99742				09/20/07 18:40
Cadmium	0.04991	mg/L	0.0010	100	85	115			
Copper	0.09822	mg/L	0.010	98	85	115			
Lead	0.1036	mg/L	0.010	104	85	115			
Manganese	0.5117	mg/L	0.010	102	85	115			
Zinc	0.1015	mg/L	0.010	101	85	115			
Sample ID: B07091481-004BMS1	Sample Matrix Spike				Run: SUB-B99742				09/20/07 19:18
Cadmium	0.05570	mg/L	0.0010	100	70	130			
Copper	0.1507	mg/L	0.010	97	70	130			
Lead	0.1166	mg/L	0.010	106	70	130			
Manganese	41.69	mg/L	0.010		70	130			A
Zinc	42.91	mg/L	0.010		70	130			A
Sample ID: B07091481-004BMSD1	Sample Matrix Spike Duplicate				Run: SUB-B99742				09/20/07 19:57
Cadmium	0.05565	mg/L	0.0010	100	70	130	0.1	20	
Copper	0.1482	mg/L	0.010	94	70	130	1.7	20	
Lead	0.1152	mg/L	0.010	105	70	130	1.3	20	
Manganese	40.62	mg/L	0.010		70	130	2.6	20	A
Zinc	41.80	mg/L	0.010		70	130	2.6	20	A
Sample ID: MB-28872	Method Blank				Run: SUB-B99834				09/22/07 08:00
Cadmium	0.0003	mg/L	9E-06						
Copper	0.0001	mg/L	7E-05						
Lead	ND	mg/L	8E-06						
Manganese	ND	mg/L	5E-05						
Zinc	0.001	mg/L	3E-05						

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: SUB-B100042	
Sample ID: QCS - ME070703A, ME0	Initial Calibration Verification Standard							09/26/07 10:15	
Zinc	0.050	mg/L	0.010	99	90	110			
Sample ID: QCS - ME070703A, ME0	Initial Calibration Verification Standard							09/26/07 20:10	
Zinc	0.049	mg/L	0.010	98	90	110			
Sample ID: QCS - ME070703A, ME0	Initial Calibration Verification Standard							09/27/07 07:15	
Zinc	0.048	mg/L	0.010	97	90	110			
Method: E200.8								Batch: B_R100042	
Sample ID: LRB	Method Blank				Run: SUB-B100042			09/26/07 11:17	
Zinc	0.0008	mg/L	3E-05						
Sample ID: LFB	Laboratory Fortified Blank				Run: SUB-B100042			09/26/07 11:25	
Zinc	0.052	mg/L	0.010	103	85	115			
Sample ID: B07091546-002AMS	Sample Matrix Spike				Run: SUB-B100042			09/26/07 18:22	
Zinc	0.15	mg/L	0.010	94	70	130			
Sample ID: B07091546-002AMSD	Sample Matrix Spike Duplicate				Run: SUB-B100042			09/26/07 18:29	
Zinc	0.15	mg/L	0.010	90	70	130	1.3	20	
Sample ID: H07090135-001B	Sample Matrix Spike				Run: SUB-B100042			09/27/07 04:17	
Zinc	0.2468	mg/L	0.010	94	70	130			
Sample ID: H07090135-001B	Sample Matrix Spike Duplicate				Run: SUB-B100042			09/27/07 04:25	
Zinc	0.2422	mg/L	0.010	92	70	130	1.9	20	

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QA/QC Summary Report

Client: Asarco Consulting
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Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8								Analytical Run: SUB-B100137	
Sample ID: QCS - ME070703A, ME0	Initial Calibration Verification Standard								09/27/07 13:16
Arsenic	0.050	mg/L	0.0050	100	90	110			
Cadmium	0.025	mg/L	0.0010	99	90	110			
Copper	0.049	mg/L	0.010	97	90	110			
Lead	0.050	mg/L	0.010	100	90	110			
Selenium	0.050	mg/L	0.0050	99	90	110			
Sample ID: QCS - ME070703A, ME0	Initial Calibration Verification Standard								09/27/07 17:32
Arsenic	0.051	mg/L	0.0050	102	90	110			
Cadmium	0.025	mg/L	0.0010	100	90	110			
Copper	0.049	mg/L	0.010	98	90	110			
Lead	0.050	mg/L	0.010	100	90	110			
Selenium	0.050	mg/L	0.0050	101	90	110			
Sample ID: QCS - ME070703A, ME0	Initial Calibration Verification Standard								09/28/07 02:39
Arsenic	0.051	mg/L	0.0050	102	90	110			
Cadmium	0.025	mg/L	0.0010	99	90	110			
Copper	0.048	mg/L	0.010	97	90	110			
Lead	0.050	mg/L	0.010	101	90	110			
Selenium	0.050	mg/L	0.0050	100	90	110			
Method: E200.8								Batch: B_R100137	
Sample ID: LRB	Method Blank				Run: SUB-B100137				09/27/07 14:18
Arsenic	ND	mg/L	4E-05						
Cadmium	ND	mg/L	9E-06						
Copper	ND	mg/L	7E-05						
Lead	ND	mg/L	8E-06						
Selenium	ND	mg/L	0.0001						
Sample ID: LFB	Laboratory Fortified Blank				Run: SUB-B100137				09/27/07 14:26
Arsenic	0.054	mg/L	0.0050	108	85	115			
Cadmium	0.054	mg/L	0.0010	108	85	115			
Copper	0.053	mg/L	0.010	107	85	115			
Lead	0.054	mg/L	0.010	107	85	115			
Selenium	0.054	mg/L	0.0050	108	85	115			
Sample ID: B07091627-005AMS	Sample Matrix Spike				Run: SUB-B100137				09/28/07 06:15
Cadmium	0.054	mg/L	0.0010	108	70	130			
Copper	0.76	mg/L	0.010		70	130			A
Lead	0.067	mg/L	0.0010	111	70	130			
Selenium	0.058	mg/L	0.0050	114	70	130			

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_R100137
Sample ID: B07091627-005AMSD	Sample Matrix Spike Duplicate				Run: SUB-B100137			09/28/07 06:23	
Cadmium	0.053	mg/L	0.0010	106	70	130	2.1	20	
Copper	0.74	mg/L	0.010		70	130	1.9	20	A
Lead	0.066	mg/L	0.0010	109	70	130	1.4	20	
Selenium	0.057	mg/L	0.0050	113	70	130	0.8	20	
Sample ID: H07090135-011B	Sample Matrix Spike				Run: SUB-B100137			09/27/07 19:34	
Arsenic	161.0	mg/L	0.0050		70	130			A
Cadmium	0.5344	mg/L	0.0010	107	70	130			
Copper	0.5263	mg/L	0.010	104	70	130			
Lead	0.5545	mg/L	0.010	110	70	130			
Selenium	0.5625	mg/L	0.0050	108	70	130			
Method: E200.8									Analytical Run: SUB-B100247
Sample ID: QCS - ME070703A, ME0	Initial Calibration Verification Standard							10/01/07 10:43	
Arsenic	0.048	mg/L	0.0050	97	90	110			
Sample ID: QCS - ME070703A, ME0	Initial Calibration Verification Standard							10/01/07 22:26	
Arsenic	0.049	mg/L	0.0050	97	90	110			
Sample ID: QCS - ME070703A, ME0	Initial Calibration Verification Standard							10/02/07 07:43	
Arsenic	0.049	mg/L	0.0050	98	90	110			
Method: E200.8									Batch: B_R100247
Sample ID: LRB	Method Blank				Run: SUB-B100247			10/01/07 11:45	
Arsenic	ND	mg/L	4E-05						
Sample ID: LFB	Laboratory Fortified Blank				Run: SUB-B100247			10/01/07 11:53	
Arsenic	0.052	mg/L	0.0050	104	85	115			
Sample ID: B07092445-001BMS1	Sample Matrix Spike				Run: SUB-B100247			10/01/07 13:33	
Arsenic	0.1920	mg/L	0.0050	99	70	130			
Sample ID: B07092445-001BMSD1	Sample Matrix Spike Duplicate				Run: SUB-B100247			10/01/07 13:41	
Arsenic	0.1958	mg/L	0.0050	102	70	130	2.0	20	
Sample ID: B07091694-001BMS	Sample Matrix Spike				Run: SUB-B100247			10/01/07 16:15	
Arsenic	0.056	mg/L	0.0010	108	70	130			
Sample ID: B07091694-001BMSD	Sample Matrix Spike Duplicate				Run: SUB-B100247			10/01/07 16:22	
Arsenic	0.056	mg/L	0.0010	107	70	130	1.0	20	

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QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: SUB-B99742
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard									09/20/07 11:31
Arsenic	0.051	mg/L	0.0050	101	90	110			
Cadmium	0.025	mg/L	0.0010	99	90	110			
Copper	0.049	mg/L	0.010	97	90	110			
Lead	0.049	mg/L	0.010	99	90	110			
Manganese	0.25	mg/L	0.010	98	90	110			
Selenium	0.050	mg/L	0.0050	100	90	110			
Zinc	0.050	mg/L	0.010	100	90	110			
Sample ID: QCS - ME070703A,ME07 Initial Calibration Verification Standard									09/21/07 00:43
Arsenic	0.052	mg/L	0.0050	103	90	110			
Cadmium	0.025	mg/L	0.0010	101	90	110			
Copper	0.050	mg/L	0.010	100	90	110			
Lead	0.051	mg/L	0.010	101	90	110			
Manganese	0.25	mg/L	0.010	101	90	110			
Selenium	0.051	mg/L	0.0050	102	90	110			
Zinc	0.051	mg/L	0.010	102	90	110			
Method: E200.8									Batch: B_R99742
Sample ID: LRB Method Blank					Run: SUB-B99742				09/20/07 12:33
Arsenic	ND	mg/L	4E-05						
Cadmium	ND	mg/L	9E-06						
Copper	ND	mg/L	7E-05						
Lead	1E-05	mg/L	8E-06						
Manganese	ND	mg/L	5E-05						
Selenium	ND	mg/L	0.0001						
Zinc	0.001	mg/L	3E-05						
Sample ID: LFB Laboratory Fortified Blank					Run: SUB-B99742				09/20/07 12:40
Arsenic	0.051	mg/L	0.0050	102	85	115			
Cadmium	0.050	mg/L	0.0010	101	85	115			
Copper	0.051	mg/L	0.010	102	85	115			
Lead	0.051	mg/L	0.010	103	85	115			
Manganese	0.051	mg/L	0.010	102	85	115			
Selenium	0.051	mg/L	0.0050	102	85	115			
Zinc	0.053	mg/L	0.010	103	85	115			
Sample ID: H07090135-001B Sample Matrix Spike					Run: SUB-B99742				09/21/07 07:40
Arsenic	7.340	mg/L	0.0050		70	130			A
Cadmium	0.2504	mg/L	0.0010	100	70	130			
Copper	0.2359	mg/L	0.010	92	70	130			
Lead	0.2548	mg/L	0.010	102	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

ENERGY LABORATORIES, INC. • P.O. Box 5688 • 3161 East Lyndale Ave. • Helena, MT 59604
877-472-0711 • 406-442-0711 • 406-442-0712 fax • helena@energylab.com

QA/QC Summary Report

Client: Asarco Consulting
Project: 1054 Asarco E. Helena

Report Date: 10/04/07
Work Order: H07090135

Analyte	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: B_R99742
Sample ID: H07090135-001B	Sample Matrix Spike				Run: SUB-B99742				09/21/07 07:40
Manganese	6.685	mg/L	0.010		70	130			A
Zinc	0.2520	mg/L	0.010	97	70	130			
Sample ID: H07090135-001B	Sample Matrix Spike Duplicate				Run: SUB-B99742				09/21/07 07:48
Arsenic	7.390	mg/L	0.0050		70	130	0.7	20	A
Cadmium	0.2496	mg/L	0.0010	100	70	130	0.3	20	
Copper	0.2302	mg/L	0.010	90	70	130	2.5	20	
Lead	0.2531	mg/L	0.010	101	70	130	0.7	20	
Manganese	6.620	mg/L	0.010		70	130	1.0	20	A
Zinc	0.2484	mg/L	0.010	96	70	130	1.4	20	
Method: E200.8									Analytical Run: SUB-B99834
Sample ID: QCS - ME070703A,ME07	Initial Calibration Verification Standard								09/21/07 14:22
Zinc	0.049	mg/L	0.010	99	90	110			
Sample ID: QCS - ME070703A,ME07	Initial Calibration Verification Standard								09/22/07 02:20
Zinc	0.050	mg/L	0.010	100	90	110			
Sample ID: QCS - ME070703A,ME07	Initial Calibration Verification Standard								09/22/07 17:19
Zinc	0.049	mg/L	0.010	99	90	110			
Sample ID: QCS - ME070703A,ME07	Initial Calibration Verification Standard								09/23/07 08:32
Zinc	0.049	mg/L	0.010	98	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Energy Laboratories Inc
Workorder Receipt Checklist

H07090135

Asarco Consulting

Login completed by: Roxanne L. Tubbs

Reviewed by: [illegible]

Reviewed Date: 9/17/07

Date and Time Received: 9/13/2007 3:50 PM

Received by: rlt

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.0°C
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Hydrometrics, Inc.
consulting scientists and engineers

3020 Bozeman Avenue
Helena, MT 59601
(406) 443-4150
Fax: (406) 443-4155
www.hydrometrics.com

September 13, 2007

Energy Laboratories, Inc
Helena, MT 59601

RE: Asarco East Helena Bi-monthly Monitoring & Slurry Wall Groundwater Samples

Dear Energy Labs:

Enclosed are 11 ground water samples with identification codes AEH-0709-153 through -163, collected at the Asarco East Helena plant site on September 13, 2007. Samples should be analyzed for parameters per the chain-of-custody and following attached parameter list: Table B, Slurry Wall. Arsenic speciation samples need to be shipped priority overnight to your Casper lab to be analyzed within 30 hrs of sampling.

The data reports and invoices for analytical work should be directed to Bob Miller at Asarco Consulting, Inc. in Tacoma, Washington. Feel free to call Greg Bryce (406-443-4150 x155) if you have any questions about the samples.

Sincerely,

Greg Bryce
Chemist

Enclosures

K:\PROJECT\1054\10708 labcoverGW.DOC

SLURRY WALL GROUNDWATER SAMPLING ANALYTICAL PARAMETERS

Parameter	Analytical Technique	Analytical Method	Project Detection Limit (ppm)
PH	PH Meter	SM 4500H-B	
Specific Conductivity	SC Meter	SM 2510 B	
TDS	Gravimetric	SM 2540C	10
TSS	Gravimetric	SM 2540D	10
Total Alkalinity as CaCo3	Titrimetric	SM 2320B	1
Bicarbonate	Titrimetric	SM 2320B	1
Sulfate	Turbidimetric	SM 4500S04 E	1
Chloride	Colorimetric	SM 4500 CL C	1
Calcium	ICP	E200.7	5
Magnesium	ICP	E200.7	5
Sodium	ICP	E200.7	5
Potassium	ICP	E200.7	5
Arsenic (tot & dis)	ICP ICP-MS	200.7 200.8	0.005
Cadmium (tot & dis)	ICP ICP-MS	200.7 200.8	0.001
Copper (tot & dis)	ICP ICP-MS	200.7 200.8	0.004
Iron (tot & dis)	ICP ICP-MS	200.7 200.8	0.020
Manganese (tot & dis)	ICP ICP-MS	200.7 200.8	0.015
Lead (tot & dis)	ICP ICP-MS	200.7 200.8	0.005
Zinc (tot & dis)	ICP ICP-MS	200.7 200.8	0.020
As III, As V		E 1632A M	0.005
SWL	Electric Tape	HF-SOP-10	0.01 ft
Temperature	PH Meter	HF-SOP-20	NA
Dissolved Oxygen (DO)	DO Meter	HF-SOP-22	NA
PH	pH Meter	HF-SOP-20	NA
Specific Conductivity (SC)	SC Meter	HF-SOP-79	NA

[1] Samples will be analyzed for total metals and for dissolved constituents (field-filtered through a 0.45 μm filter prior to preservation).

TABLE B. 2007 RESIDENTIAL WELL AND EH-100 SERIES WELL SAMPLING ANALYTICAL PARAMETERS

Parameter	Analytical Technique	Analytical Method	Project Detection Limit (ppm)
[illegible]			
PH	PH Meter	SM 4500H-B	
Specific Conductivity	SC Meter	SM 2510 B	
TDS	Gravimetric	SM 2540C	10
TSS	Gravimetric	SM 2540D	10
[illegible]			
Alkalinity	Titrimetric	SM 2320B	1
Bicarbonate	Titrimetric	SM 2320B	1
Sulfate	Turbidimetric	SM 4500S04 E	1
Chloride	Colorimetric	SM 4500 CL C	1
Calcium	ICP	E200.7	5
Magnesium	ICP	E200.7	5
Sodium	ICP	E200.7	5
Potassium	ICP	E200.7	5
[illegible]			
Arsenic	ICP ICP-MS	200.7 200.8	0.005 (0.002 for residential samples)
Cadmium	ICP ICP-MS	200.7 200.8	0.001
Copper	ICP ICP-MS	200.7 200.8	0.004
Iron	ICP ICP-MS	200.7 200.8	0.020
Manganese	ICP ICP-MS	200.7 200.8	0.015
Lead	ICP ICP-MS	200.7 200.8	0.005
Selenium	ICP ICP-MS	200.7 200.8	0.005
Zinc	ICP ICP-MS	200.7 200.8	0.020
SWL	Electric Tape	HF-SOP-10	0.01 ft
Temperature	PH Meter	HF-SOP-20	NA
Dissolved Oxygen (DO)	DO Meter	HF-SOP-22	NA
PH	pH Meter	HF-SOP-20	NA
Specific Conductivity (SC)	SC Meter	HF-SOP-79	NA