LONGHORN ARMY AMMUNITION PLANT KARNACK, TEXAS

ADMINISTRATIVE RECORD

Volume 1 of 19

2010

Bate Stamp Numbers
00082431 – 00083381

Prepared for

Department of the Army
Longhorn Army Ammunition Plant

1976 – 2010

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX

VOLUME 1 of 19

2010

A. Title: Report - Final Proposed Plan for the Former Pistol Range, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Shaw Environmental, Inc., Houston, Texas
Recipient: All Stakeholders
Date: January 7, 2010
Bate Stamp: 00082431 - 00082445

B. Title: Report - Final Proposed Plan for LHAAP-49, Former Acid Storage Area, Longhorn Army Ammunition Plant, Karnack, Texas
Author(s): Shaw Environmental, Inc., Houston, Texas
Recipient: All Stakeholders
Date: January 7, 2010
Bate Stamp: 00082446 - 00082461

C. Title: Report - Final Completion Report Non-Time-Critical Removal Action at the Former Pistol Range, Longhorn Army Ammunition Plan, Karnack, Texas
Author(s): Shaw Environmental, Inc., Houston, Texas
Recipient: All Stakeholders
Date: January 12, 2010
Bate Stamp: 00082462 - 00083381

Shaw® Shaw Environmental, Inc.

Date: ***January 7, 2010***

Project No.: ***117591***

TRANSMITTAL LETTER:

To: Mr. Aaron Williams

Address: US Army Corps of Engineers - Tulsa
CESWT-PP-M
1645 South 101st East Ave
Tulsa, Oklahoma 74128

Re: **Final Proposed Plan for the Former Pistol Range**
Longhorn Army Ammunition Plant, Karnack, Texas
Contract No. W912QR-04-D-0027/DS02

For: Review ____ As Requested ____ Approval ____ Corrections ____ Submittal x Other ____

Item No:	***No. of Copies***	***Date:***	***Document Title***
1	2	January 2010	**Final Proposed Plan for the Former Pistol Range** Longhorn Army Ammunition Plant, Karnack, Texas

Aaron – Enclosed please find the final version of the above-named report for your records.

The document has been distributed according to the list below. Please call if any questions or comments.

Sincerely:

Praveen Srivastav
Project Manager

Distribution List:
Ms. Rose Zeiler – BRAC-LHAAP
Mr. Matthew Mechenes – AEC
Ms. Fay Duke – TCEQ (2)
Mr. Steve Tzhone – EPA (2)
Mr. Dale Vodak - TCEQ
Mr. Paul Bruckwicki –USFWS
Mr. John Lambert/Scottie Fiehler (distributed by A. Williams) - USACE

1401 Enclave Parkway, Houston, Texas 77077 ***Phone: (281) 531-3100/Fax: (281) 531-3143***

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

January 7, 2010

DAIM-ODB-LO

Mr. Stephen Tzhone
US Environmental Protection Agency
Superfund Division (6SF-AT)
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Final Proposed Plan for the Former Pistol Range
Longhorn Army Ammunition Plant, Karnack, Texas, January 2010

Dear Mr. Tzhone,

The above-referenced document is being transmitted to you for your files. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager, be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
F. Duke, TCEQ, Austin, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
J. Lambert/S. Fiehler, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Mechenes, USAEC, MD
P. Srivastav, Shaw – Houston, TX (for project files)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

January 7, 2010

DAIM-ODB-LO

Ms. Fay Duke (MC-136)
SSDAT/Superfund Section
Remediation Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Proposed Plan for the Former Pistol Range,
Longhorn Army Ammunition Plant, Karnack, Texas, January 2010
SUP 126

Dear Ms. Duke,

The above-referenced document is being transmitted to you for your files. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
S. Tzhone, USEPA Region 6, Dallas, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
J. Lambert/S. Fiehler, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Mechenes, USAEC, MD
P. Srivastav, Shaw, Houston, TX (for project files)

FINAL
PROPOSED PLAN
FOR THE
FORMER PISTOL RANGE

ISSUED BY: U.S. ARMY

Longhorn Army Ammunition Plant
Karnack, Texas

January 2010

INTRODUCTION

In this Proposed Plan, the U.S. Army presents its proposal for no further action at the former Pistol Range at the Longhorn Army Ammunition Plant (LHAAP). The primary purpose of the Proposed Plan is to facilitate public involvement in the remedy selection process. The Proposed Plan provides the public with basic background information about the former Pistol Range, recommends that no further action is necessary to ensure the protection of human health and the environment, and explains the rationale for recommending no further action.

The U.S. Army is issuing this Proposed Plan for public review, comment, and participation to fulfill part of its public participation responsibilities under Sections 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986, and under Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The CERCLA prescribes a step-wise progression of increasingly complex activities to respond to risk posed by contaminated sites **(Figure 1)**.

The preparation and review of a Proposed Plan is a distinct step required by CERCLA. This Proposed Plan provides background information that can be found in greater detail in letters, the Final Engineering Evaluation/Cost Analysis (EE/CA), the Action Memorandum, the Installation-Wide Baseline Ecological Risk Assessment (BERA), and other supporting documents that are contained in the Administrative Record. The project management team, including the U.S. Army, U.S. Environmental Protection Agency (USEPA), and the Texas Commission on Environmental Quality (TCEQ), encourages the public to review these documents to gain a more comprehensive understanding of the environmental conditions at the former Pistol Range, and also to review and comment on the recommendation for no further action presented in this Proposed Plan.

The U.S. Army, the lead agency for environmental response actions at LHAAP, is acting in partnership with USEPA Region 6 and TCEQ. As the lead agency, the U.S. Army is charged with

Dates to remember: January 25 to February 23, 2010
MARK YOUR CALENDER

PUBLIC COMMENT PERIOD:
January 25, 2010, to February 23, 2010
The U.S. Army will accept written comments on the Proposed Plan during the public comment period.

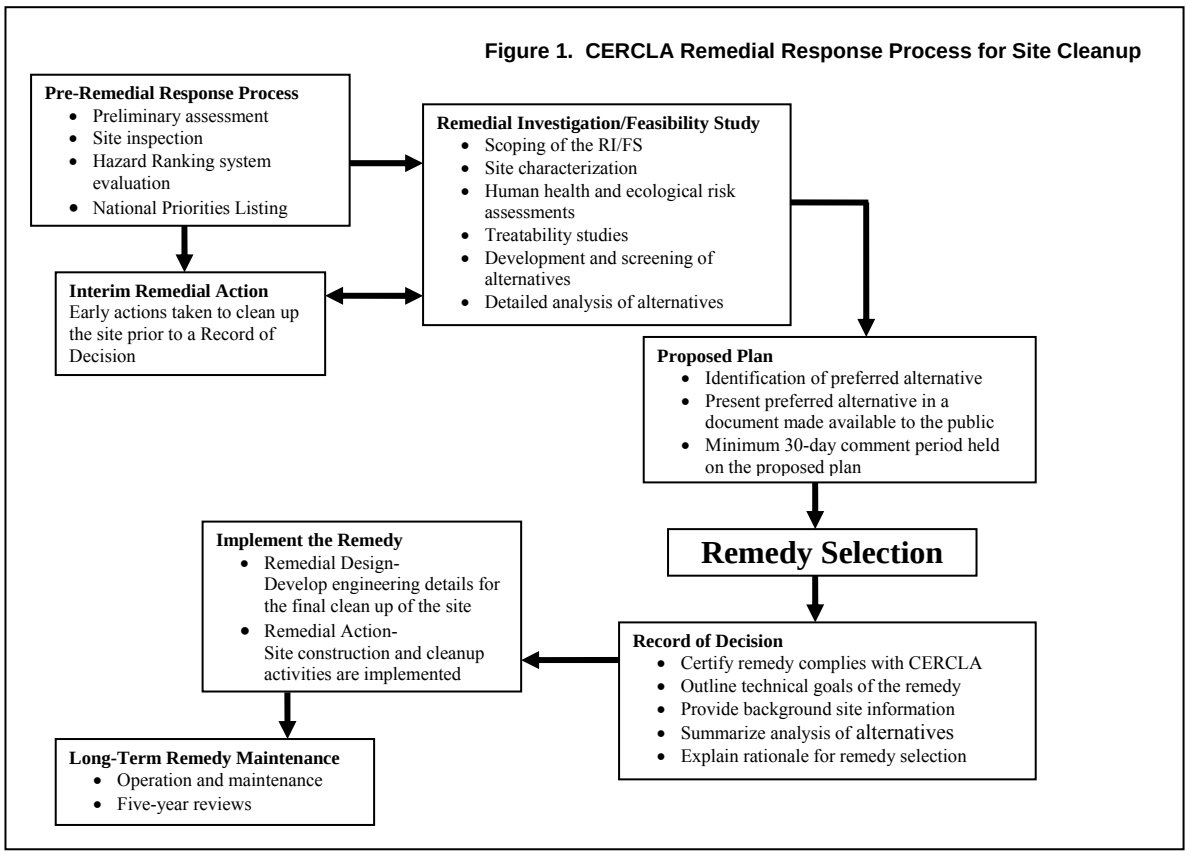
PUBLIC MEETING: The U.S. Army will hold a public meeting to explain the Proposed Plan for the former Pistol Range. Oral and written comments will be accepted at the meeting. The meeting will be held on January 26, 2010, from 6:00 p.m. to 8:00 p.m. at the Karnack Community Center.

For more information, see the Administrative Record at the following location:

Marshall Public Library
300 S. Alamo
Marshall, Texas 75670

Business Hours:
Monday – Thursday (10:00 a.m. – 8:00 p.m.)
Friday – Saturday (10:00 a.m. – 5:00 p.m.)

For further information on the former Pistol Range, please contact:
Dr. Rose M. Zeiler
Site Manager
Longhorn Army Ammunition Plant
P.O. Box 220
Ratcliff, Arkansas 72951
Direct No.: 479.635.0110
E-mail address: rose.zeiler@us.army.mil



planning and implementing remedial actions at LHAAP. Regulatory agencies assist the U.S. Army by providing technical support, project review, project comment, and oversight in accordance with CERCLA and the NCP as well as the Federal Facility Agreement (FFA).

SITE BACKGROUND

LHAAP is located in central-east Texas in the northeastern corner of Harrison County **(Figure 2)**. The installation occupies approximately 1,400 of its former 8,416 acres between State Highway 43 at Karnack, Texas, and the western shore of Caddo Lake. The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the southeast. Caddo Lake, a large freshwater lake situated on the Texas-Louisiana border, bounds LHAAP to the north and east.

The U.S Army has transferred approximately 7,000 acres to the U.S. Fish and Wildlife Service (USFWS) for management as the Caddo Lake National Wildlife Refuge. The property transfer process is continuing as response is completed at individual sites. The local restoration advisory board has been kept informed of previous investigations at this site through regularly held quarterly meetings. Additionally, the administrative record is updated at least twice per year and is available at the local public library.

Due to releases of chemicals from operations at the facility, LHAAP was placed on the Superfund National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination associated with the listing of LHAAP as a Superfund site began in 1990. After being listed on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the

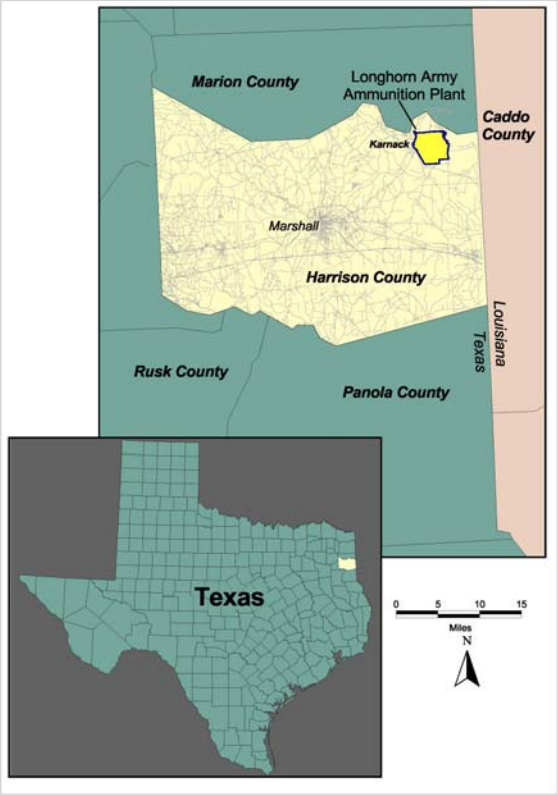


Figure 2 Location of the Longhorn Army Ammunition Plant, Harrison County, Texas

TCEQ) entered into a CERCLA Section 120 FFA for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property.

The Pistol Range was not one of the originally listed NPL sites in the FFA but will be managed in the same manner because of the presence of lead-contaminated soil at the site.

Preliminary field investigations were conducted at the Pistol Range in 1995, with subsequent site investigations in 2006 (soil sampling for site characterization) and 2007 (groundwater sampling and vertical delineation of soil contamination). These investigations are documented in the EE/CA for the site (Shaw, 2009a). The investigations showed that there had been no impact to groundwater, but identified areas where the soil was contaminated with lead at levels that exceeded the TCEQ soil medium-specific concentration (MSC) for industrial use based on inhalation, ingestion, and dermal contact (TCEQ, 2006) under 30TAC§335.558(d). That MSC is also referred to as the Soil/Air and Ingestion Standard for Industrial Use (SAI-Ind); the SAI-Ind for lead is 1,000 milligrams per kilogram (mg/kg).

The EE/CA recommended that a non-time-critical removal action be implemented at the former Pistol Range (Shaw, 2009a). The removal action was authorized by the U.S. Army in an Action Memorandum (Shaw, 2009b). The action was implemented to remove soil that exceeded the SAI-Ind for lead and was performed in accordance with the Removal Action Work Plan (Shaw, 2009c). The removal took place in August 2009.

The removal action began with abandonment of a monitoring well (PRWW01) and marking the initial limits of excavation. Soil was then removed using a mechanical excavator, and loaded into lined roll-off containers.

The completed excavation area and depth generally matched the planned excavation, though some areas were excavated deeper to remove visible bullet fragments, and the root area of a large tree was excavated only superficially to avoid killing the tree. Confirmation sampling was conducted concurrently with excavation activities to document that the remaining soils met the established cleanup level.

The excavation was considered complete when all confirmation sample results showed lead concentrations below the

cleanup level (SAI-Ind). The site was restored by backfilling with clean soil, covering the sloped area of the excavation with erosion control fabric, and seeding and mulching.

Based on leachate analyses, the excavated soil was classified as either hazardous or non-hazardous waste. The hazardous soil was shipped to US Ecology in Robstown, Texas, and the non-hazardous soil was shipped to Allied Waste in Keithville, Louisiana. The Completion Report (Shaw, 2009d) documents the field activities carried out for the removal action.

SITE CHARACTERISTICS

The former Pistol Range is located in the southeastern portion of LHAAP, approximately 280 feet south of Avenue Q at the end of Robert Avenue (see **Figure 3**). The site is the eastern portion of a rectangular field and is approximately 110 feet north to south by 150 feet east to west (approximately 0.4 acres). The area was used as a small arms firing range by base security personnel as early as the 1950s and intermittently through 2004 for small arms qualification and recertification. The target area was a natural, wooded slope at the eastern side of the site.

Surface drainage generally flows from the east to the west through surface runoff, and eventually drains into Harrison Bayou. Harrison Bayou consists of one large creek and several small tributaries to the west and northwest of the former Pistol Range.

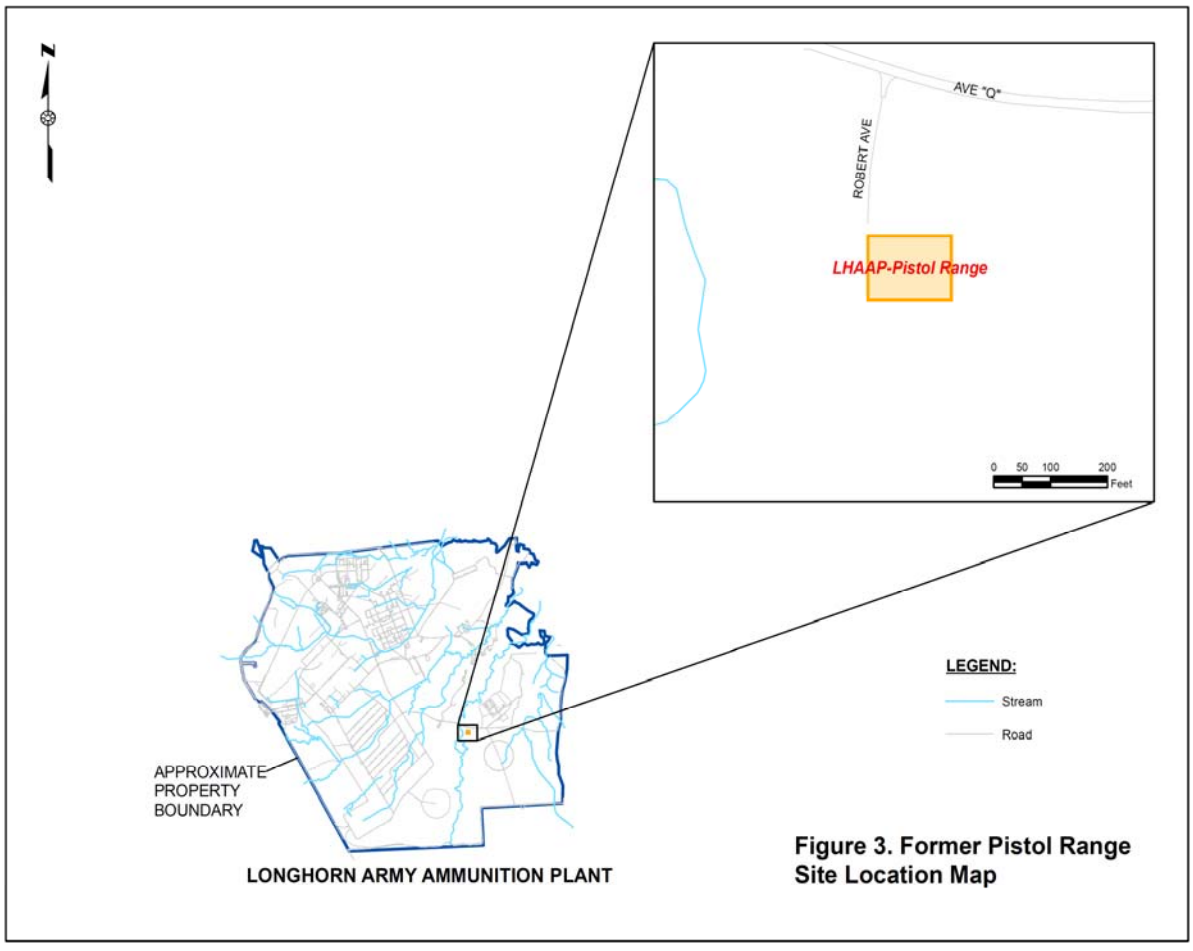


Figure 3. Former Pistol Range Site Location Map

The site was originally found to be contaminated with high concentrations of lead (up to 5,240 mg/kg) in surface and near-surface soil at the target slope and the flat area just west of the slope. The 2009 removal action was implemented to remediate the contaminated soil. Analytical results for the remaining soil are below 1,000 mg/kg.

Lead in groundwater was found to be below the maximum contaminant level MCL (15 µg/L).

While lead was found in surface soil and near surface soil at the former Pistol Range, the contamination was not found to be mobile; thus, no principal threat source material was identified at the former Pistol Range.

SCOPE AND ROLE OF PROPOSED REMEDY

The proposed remedy at the former Pistol Range is No Further Action. The earlier removal action was formulated based on future use of the site as part of a national wildlife refuge. The removal action addressed the only identified potential risk to human health or the environment under that scenario – inhalation, ingestion, and dermal contact associated with contaminated soil during industrial use. The removal action was proposed and implemented as a final action; no further remedial activities are envisioned at the former Pistol Range.

SUMMARY OF SITE RISKS

The reasonably anticipated future use of this site is nonresidential use as part of the Caddo Lake National Wildlife Refuge. This anticipated future use is based on a Memorandum of Agreement (MOA) (U.S. Army, 2004) between the USFWS and the U.S. Army. That MOA documents the transfer process of the LHAAP acreage to USFWS to become the Caddo Lake National Wildlife Refuge. Presently the Caddo Lake National Wildlife Refuge occupies approximately 7,000 acres of the former installation. The property must be kept as a National Wildlife Refuge unless there is an act of Congress which removes the parcel or the land is exchanged in accordance with the National Wildlife Refuge System Administration Act of 1966 and the National Wildlife Refuge System Act Amendments of 1974.

Based on that land use, contaminant levels in the soil and groundwater were compared to promulgated regulatory levels for protection of human health as part of the EE/CA (Shaw, 2009a). Ecological risks were evaluated in the BERA (Shaw, 2007), and application of the BERA findings to the former Pistol Range was also presented in the EE/CA (Shaw, 2009a). Evaluation of human and ecological risks demonstrated that the only concern under the anticipated land use was lead contamination in surface soil and near surface soil that exceeded the SAI-Ind. Implementation of the 2009 removal action addressed that concern and made the site fully compatible with the anticipated land use.

Human Health Risks

To evaluate potential human health issues at the former Pistol Range, the results for arsenic, copper, lead, nickel, and zinc were compared to their respective SAI-Ind values and soil MSC for industrial use based on groundwater protection (GWP-Ind). For arsenic, copper, nickel, and zinc, no result exceeded the SAI-Ind. However, prior to the removal action, the former Pistol Range exhibited soil contamination that exceeded the SAI-Ind for total lead (1,000 mg/kg). While industrial cleanup levels are applicable to

a depth of 2 feet bgs (TCEQ, 1998), lead contamination did not exceed the SAI-Ind in any sample deeper than 12 inches.

The non-time-critical removal action in 2009 eliminated the risk associated with soil exceeding the SAI-Ind for lead. That soil was excavated and disposed off site; soil removal was verified via confirmation sampling. Confirmation sample results varied from 6.53 to 607 mg/kg lead – levels suitable for nonresidential use. The excavation was backfilled with clean soil (Shaw, 2009d).

Some soil results in the 2005 and 2007 investigations exceeded GWP-Ind values. Therefore, the 2007 investigation activities further examined the potential for contamination to leach to groundwater. The limited extent of vertical migration of lead through the soil, and the lack of lead contamination in the groundwater, further supported by vertical transport modeling, demonstrated that contamination of the groundwater was not a current or potential problem (Shaw, 2009a).

The results of the 2005 and 2007 investigations also demonstrated that sediment and surface water are not impacted by the site (Shaw, 2009a).

Because the risk evaluation was based on the reasonably anticipated future use as a national wildlife refuge, Texas Administrative Code requires that a notification be filed in the county disclosing that the site is suitable for nonresidential use.

Ecological Risks

The ecological risk for the former Pistol Range was addressed in the installation-wide BERA (Shaw, 2007). For the BERA, the entire installation was divided into three large sub-areas (i.e., the Industrial Sub-Area, Waste Sub-Area, and Low Impact Sub-Area) for the terrestrial evaluation. The individual sites at LHAAP were grouped into one of these sub-areas, which were delineated based on commonalities of historic use, habitat type, and spatial proximity to each other. Conclusions for individual sites and the potential for detected chemicals to adversely affect the environment were made in the context of the overall conclusions of the sub-area in which the site falls. The former Pistol Range lies within the Waste Sub-Area.

The BERA evaluated potential ecological risk to a number of endpoint receptors, as well as terrestrial plant and invertebrate communities. Endpoint receptors were evaluated using a food chain model that estimated a daily dose intake, which was subsequently compared with toxicity reference values to generate a hazard quotient. Terrestrial communities were evaluated through comparisons of detected concentrations to conservative benchmarks. Multiple lines of evidence (e.g., spatial distribution of concentrations, etc.) were also considered. After evaluating all lines of evidence, the BERA concluded that there were potential ecological concerns in the Waste Sub-Area associated with barium, 2,4-dinitrotoluene (DNT), 2,6-DNT, 2,4,6-trinitrotoluene (TNT), and dioxin (Shaw, 2007). However, the BERA did not find lead or the other parameters detected in the soil at the former Pistol Range to be of ecological concern within the Waste Sub-Area. Therefore, no action is needed at the former Pistol Range for the protection of ecological receptors.

DESCRIPTION OF "NO FURTHER ACTION" REMEDY

No further action is proposed for this site. This recommendation is based on the

existing data and determination of no unacceptable risk to human health or to ecological receptors (Shaw, 2009a; Shaw 2009d). A Record of Decision (ROD) based on this recommendation will allow this site to be removed from the list of LHAAP environmental sites requiring additional effort by the U.S. Army. The recommendation for no further action is consistent with the criteria required under CERCLA.

Contaminated soil above industrial (nonresidential) levels was removed during the 2009 removal action (Shaw, 2009d). Therefore, notification will be filed with Harrison County, as required by 30TAC§335.566, stating that the former Pistol Range is considered suitable for nonresidential use, and five year reviews will be required. Limited monitoring will take place in the form of Letters of Certification from the Army (or the transferee) to TCEQ every five years to document that the use of the site remains consistent with nonresidential use scenarios.

Based on information currently available, the U.S. Army believes that the previous removal action eliminated the need to conduct further remedial action at the former Pistol Range and that the No Further Action remedy is protective of human health and the environment.

COMMUNITY PARTICIPATION

The U.S. Army, USEPA, and TCEQ provide information regarding the former Pistol Range through public meetings and the Administrative Record file for the facility. The public is encouraged to gain a more comprehensive understanding of this site and the associated Superfund activities.

The dates for the public comment period, the date, location, and time of the public meeting, and the locations of the Administrative Record files are provided on the front page of this Proposed Plan.

Any significant changes to the Proposed Plan, as presented in this document, will be identified and explained in the ROD.

Primary Reference Documents for the Former Pistol Range

Complete Environmental Services (CES), 2004, Correspondence from William R. Corrigan, III, addressed to Rose M. Zeiler, LHAAP Site Manager, Department of the Army, Subject: Data from samples at Pistol Firing Range, Karnack, Texas, July 6.

Shaw Environmental & Infrastructure, Inc. (Shaw), 2007, *Installation-Wide Baseline Ecological Risk Assessment, Longhorn Army Ammunition Plant, Karnack, Texas, Volume I: Step 3 Report*, Houston, Texas, November.

Shaw, 2009a, *Final Engineering Evaluation/Cost Analysis, Former Pistol Range, Longhorn Army Ammunition Plant, Karnack, Texas*, February.

Shaw, 2009b, *Final Action Memorandum for Former Pistol Range and LHAAP-04, Former Pilot Wastewater Treatment Plant*, July.

Shaw, 2009c, *Final Removal Action Work Plan, Former Pistol Range and LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas*, August.

Shaw, 2009d, *Completion Report, Non-Time-Critical Removal Action at the Former Pistol Range, Longhorn Army Ammunition Plant, Karnack, Texas*, October.

Texas Commission on Environmental Quality (TCEQ), 1998, *Interoffice Memorandum from Ronald R. Pedde to Remediation Division Staff, Subject: Implementation of the Existing Risk Reduction Rule*, July 23.

TCEQ, 2006, Update Examples of Standard No. 2, Appendix II Medium-Specific Concentrations, March 31, 2006.

Thiokol Corporation (Thiokol), 1995, Letter from B. Singh/Thiokol to Administrative Contracting Officer, Subject: Ref. Letter dated 7 June 1995, Subject: TNRCC Area of Concern – Lead Contamination at Pistol Firing Range, 20 July.

U.S. Army 1991, *Federal Facilities Agreement, Longhorn Army Ammunition Plant, Karnack, Texas*, December 30.

U.S. Army, 2004, *Memorandum of Agreement Between the Department of the Army and the Department of the Interior for the Interagency Transfer of Lands at the Longhorn Army Ammunition Plant for the Caddo Lake National Wildlife Refuge, Harrison County, Texas,* Signed by the Department of the Interior on April 27, 2004 and the Army on April 29, 2004.

GLOSSARY OF TERMS

Administrative Record — The body of reports, official correspondence, and other documents that establish the official record of the analysis, cleanup, and final closure of a CERCLA site.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) — This law authorizes the Federal Government to respond directly to releases (or threatened releases) of hazardous substances that may be a danger to public health, welfare, or the environment. The U.S. Army currently has the lead responsibility for these activities at LHAAP.

Environmental Media — Major environmental categories that surround or contact humans, animals, plants, and other organisms (e.g., surface water, groundwater, soil or air) and through which chemicals or pollutants move.

Exposure — Contact of an organism with a chemical or physical agent. Exposure is quantified as the amount of the agent available at the exchange boundaries of the organism (e.g., skin, lung, digestive tract, etc.) and available for absorption.

Groundwater — Underground water that fills pores in soil or openings in rocks to the point of saturation.

Maximum Contaminant Level (MCL) — The maximum contaminant level is the maximum permissible level of a contaminant in a public water system. MCLs are defined in the Code of Federal Regulation (40 CFR 141, National Primary Drinking Water Regulations, which implement portions of the Safe Drinking Water Act). Any detected compound in the groundwater samples with a MCL was evaluated by comparing it to its associated MCL.

Proposed Plan — A report for public comment highlighting the key factors that form the basis for the selection of the preferred remediation alternative.

Remedial Action — The actual construction or implementation phase of a Superfund site cleanup that follows remedial design.

Risk Assessment — An analysis of the potential adverse health effects (current and future) caused by hazardous substances at a site in the absence of any actions to control or mitigate these releases (i.e., under an assumption of no action). The assessment contributes to decisions regarding appropriate response alternatives.

Superfund — The common name used for CERCLA; also referred to as the Trust Fund. The Superfund Program was established to help fund cleanup of hazardous waste sites. It also allows legal action to force those responsible for hazardous waste sites to pay for environmental actions.

ACRONYMS

BERA	Baseline Ecological Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Complete Environmental Services
DNT	dinitrotoluenes
EE/CA	Engineering Evaluation/Cost Analysis
FFA	Federal Facility Agreement
GWP-Ind	soil MSC for industrial use based on groundwater protection
LHAAP	Longhorn Army Ammunition Plant
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
MSC	medium-specific concentration
MOA	Memorandum of Agreement
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
ROD	record of decision
SAI-Ind	Soil/Air and Ingestion Standard for Industrial Use (30TAC§335.568); the soil MSC for industrial use based on inhalation, ingestion, and dermal contact
Shaw	Shaw Environmental & Infrastructure, Inc.
TCEQ	Texas Commission on Environmental Quality
Thiokol	Thiokol Corporation
TNT	trinitrotoluene
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for the former Pistol Range is important to the U.S. Army. Comments provided by the public are valuable in helping the U.S. Army select a final remedy for these sites.

You may use the space below to write your comments, then fold and mail to Dr. Rose M. Zeiler, P.O. Box 220, Ratcliff, Arkansas 72951. Comments must be postmarked by February 23, 2010. If you have questions about the comment period, please contact Dr. Rose M. Zeiler directly at 479-635-0110. Those with electronic communications capabilities may submit their comments to the U.S. Army via Internet at the following e-mail address: rose.zeiler@us.army.mil

Shaw® Shaw Environmental, Inc.

Date: ***January 7, 2010***

Project No.: ***117591***

TRANSMITTAL LETTER:

To: Mr. Aaron Williams

Address: US Army Corps of Engineers - Tulsa
CESWT-PP-M
1645 South 101st East Ave
Tulsa, Oklahoma 74128

Re: **Final Proposed Plan for LHAAP-49, Former Acid Storage Area**
Longhorn Army Ammunition Plant, Karnack, Texas

Contract No. W912QR-04-D-0027/DS02

For: Review ____ As Requested ____ Approval ____ Corrections ____ Submittal x Other ____

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Aaron – Enclosed please find the final version of the above-named report for your records.

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Sincerely:

Praveen Srivastav
Project Manager

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Mr. Dale Vodak - TCEQ
Mr. Paul Bruckwicki –USFWS
Mr. John Lambert/Scottie Fiehler (distributed by A. Williams) - USACE

1401 Enclave Parkway, Houston, Texas 77077 ***Phone: (281) 531-3100/Fax: (281) 531-3143***

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LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

January 7, 2010

DAIM-ODB-LO

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US Environmental Protection Agency
Superfund Division (6SF-AT)
1445 Ross Avenue
Dallas, TX 75202-2733

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Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

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J. Lambert/S. Fiehler, USACE, Tulsa District, OK
A. Williams, USACE, Tulsa District, OK
M. Mechenes, USAEC, MD
P. Srivastav, Shaw – Houston, TX (for project files)

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

January 7, 2010

DAIM-ODB-LO

Ms. Fay Duke (MC-136)
SSDAT/Superfund Section
Remediation Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Proposed Plan for LHAAP-49, Former Acid Storage Area,
Longhorn Army Ammunition Plant, Karnack, Texas, January 2010
SUP 126

Dear Ms. Duke,

The above-referenced document is being transmitted to you for your files. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

Sincerely,

Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

Copies furnished:
S. Tzhone, USEPA Region 6, Dallas, TX
D. Vodak, TCEQ, Tyler, TX
P. Bruckwicki, Caddo Lake NWR, TX
J. Lambert/S. Fiehler, USACE, Tulsa District, OK
M. Mechenes, USAEC, MD
A. Williams, USACE, Tulsa District, OK
P. Srivastav, Shaw, Houston, TX (for project files)

FINAL
PROPOSED PLAN
FOR LHAAP-49
FORMER ACID STORAGE AREA

ISSUED BY: U.S. ARMY

Longhorn Army Ammunition Plant
Karnack, Texas

January 2010

INTRODUCTION

In this Proposed Plan the U.S. Army presents its proposal for no action at LHAAP-49, the site of the former Acid Storage Area, at the Longhorn Army Ammunition Plant (LHAAP). The primary purpose of the Proposed Plan is to facilitate public involvement in the remedy selection process. The Proposed Plan provides the public with basic background information about LHAAP-49, recommends that no action is necessary to ensure the protection of human health and the environment, and explains the rationale for recommending no action.

The U.S. Army is issuing this Proposed Plan for public review, comment, and participation to fulfill part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986, and under Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The CERCLA prescribes a step-wise progression of increasingly complex activities to respond to risk posed by contaminated sites **(Figure 1)**.

The preparation and review of a Proposed Plan is a distinct step required by CERCLA. This Proposed Plan provides background information that can be found in greater detail in the Remedial Investigation (RI) Report, the Site Evaluation Report, the Installation-Wide Baseline Ecological Risk Assessment (BERA), and other supporting documents that are contained in the Administrative Record. The project management team, including the U.S. Army, U.S. Environmental Protection Agency (USEPA), and the Texas Commission on Environmental Quality (TCEQ), encourages the public to review these documents to gain a more comprehensive understanding of the environmental conditions at LHAAP-49, and also to review and comment on the recommendation for no action presented in this Proposed Plan.

The U.S. Army, the lead agency for environmental response actions at LHAAP is acting in partnership with USEPA Region 6 and TCEQ. As the lead agency, the U.S. Army is charged with

Dates to remember: January 25 to February 23, 2010
MARK YOUR CALENDER

PUBLIC COMMENT PERIOD:
January 25, 2010 to February 23, 2010
The U.S. Army will accept written comments on the Proposed Plan during the public comment period.

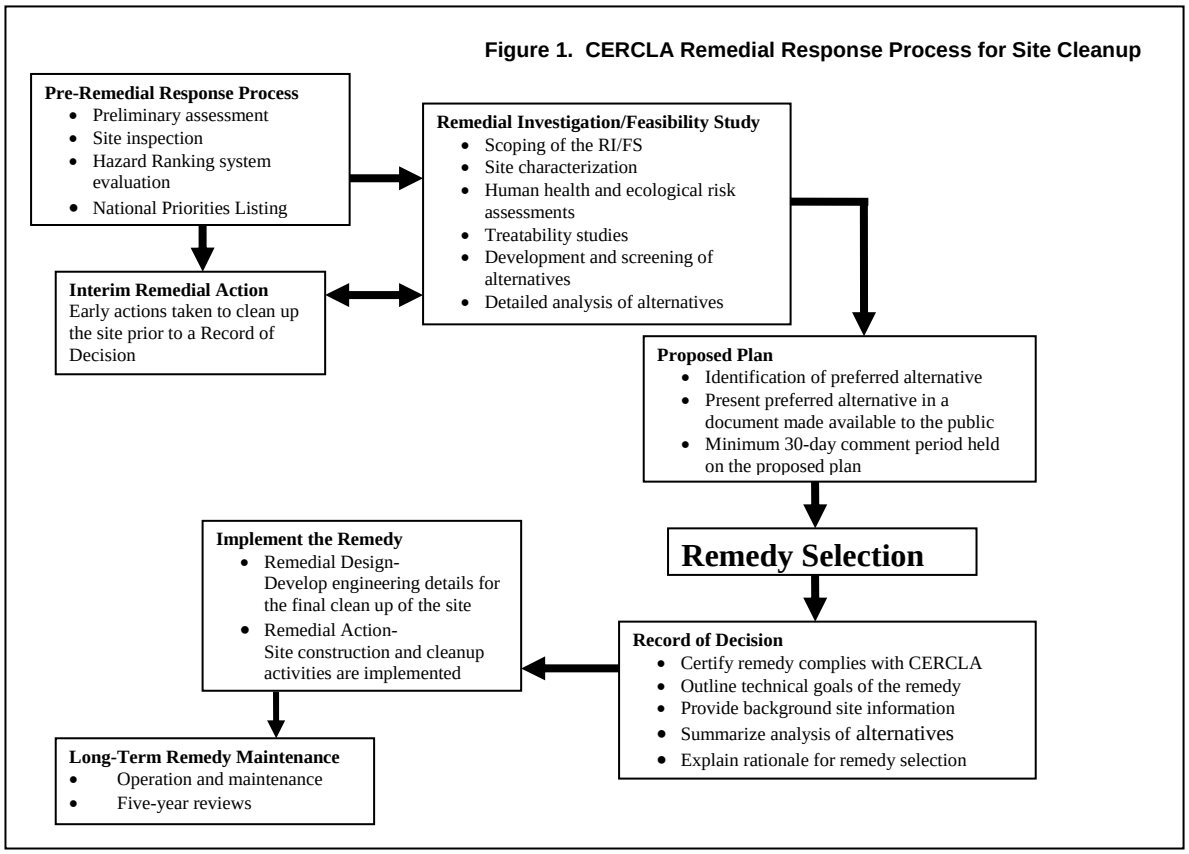
PUBLIC MEETING: The U.S. Army will hold a public meeting to explain the Proposed Plan for LHAAP-49. Oral and written comments will be accepted at the meeting. The meeting will be held on January 26, 2010 from 6:00 p.m. to 8:00 p.m. at the Karnack Community Center.

For more information, see the Administrative Record at the following location:

Marshall Public Library
300 S. Alamo
Marshall, Texas 75670
Business Hours:
Monday – Thursday (10:00 a.m. – 8:00 p.m.)
Friday – Saturday (10:00 a.m. – 5:00 p.m.)

For further information on LHAAP-49, please contact:
Dr. Rose M. Zeiler
Site Manager
Longhorn Army Ammunition Plant
P.O. Box 220
Ratcliff, Arkansas, 72951
Direct No.: 479.635.0110
E-mail address: rose.zeiler@us.army.mil

Figure 1. CERCLA Remedial Response Process for Site Cleanup



planning and implementing remedial actions at LHAAP. Regulatory agencies assist the U.S. Army by providing technical support, project review, project comment, and oversight in accordance with CERCLA and the NCP as well as the Federal Facilities Agreement (FFA).

SITE BACKGROUND

LHAAP is located in central-east Texas in the northeastern corner of Harrison County **(Figure 2)**. The installation occupies approximately 1,400 of its former 8,416 acres between State Highway 43 at Karnack, Texas, and the western shore of Caddo Lake. The nearest cities are Marshall, Texas, approximately 14 miles to the southwest, and Shreveport, Louisiana, approximately 40 miles to the southeast. Caddo Lake, a large freshwater lake situated on the Texas-Louisiana border, bounds LHAAP to the north and east.

The U.S Army has transferred approximately 7,000 acres to the U.S. Fish and Wildlife Service (USFWS) for management as the Caddo Lake National Wildlife Refuge. The property transfer process is continuing as response is completed at individual sites. The local Restoration Advisory Board has been kept informed of previous environmental activities at this site through regularly held quarterly meetings. Additionally, the administrative record is updated at least twice per year and is available at the local public library.

Due to releases of chemicals from operations at the facility, LHAAP was placed on the Superfund National Priorities List (NPL) on August 9, 1990. Activities to remediate contamination associated with the listing of LHAAP as a Superfund site began in 1990. After being listed on the NPL, the U.S. Army, the USEPA, and the Texas Water

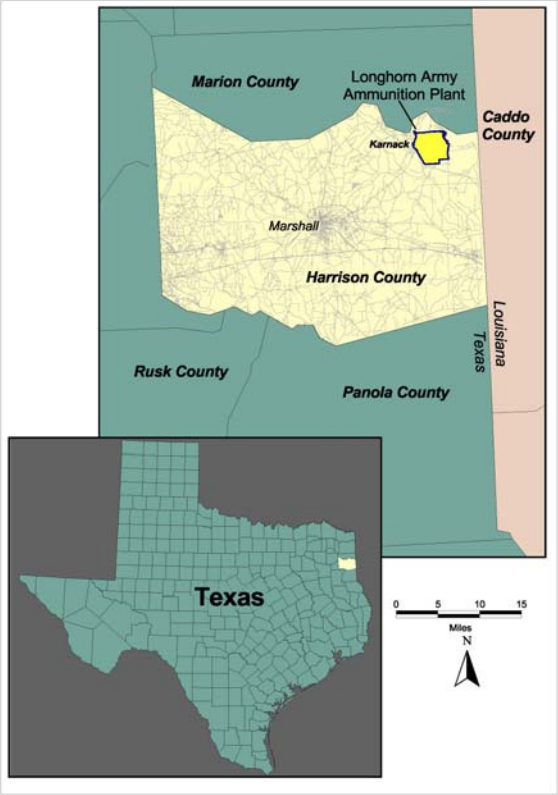


Figure 2 Location of the Longhorn Army Ammunition Plant, Harrison County, Texas

Commission (currently known as the TCEQ) entered into a CERCLA Section 120 FFA for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property.

LHAAP-49, the former Acid Storage Area, is located in the west-central portion of LHAAP **(Figure 3)**. The site covers approximately 30 acres. The site was used from 1942 to 1945 for formulation and storage of acids and acid mixtures in support of trinitrotoluene (TNT) production during World War II. Nitric acid and sulfuric acid were manufactured and handled in large quantities in this area.

The surface features at LHAAP-49 include numerous building foundations and several concrete saddles and platforms previously used for the support of aboveground storage tanks. The site is currently wooded and grassy. The topography is relatively flat with approximately 3 to 5 feet of elevation increase from west to east. Surface drainage generally flows from the southeast to the northeast, either through runoff or controlled flow via man-made drainage swales and culverts, and eventually drains into Goose Prairie Creek. Goose Prairie Creek consists of one large creek and several small tributaries to the north and northwest of LHAAP-49.

The current boundaries of LHAAP-49 were established in a U.S. Army report (U.S. Army, 2005) that examined the results of metals sample analyses in and around LHAAP-49. It specifically established the boundaries to include a 2.5 acre parcel north of 4th Street (see **Figure 3**) that had exhibited elevated mercury concentrations in soil. The remaining areas outside LHAAP-49 were deemed to be suitable for transfer to USFWS, and the USEPA concurred (USEPA, 2005).

SITE CHARACTERISTICS

Between 1998 and 2009, numerous investigations were conducted in a phased approach to identify potential site contamination at LHAAP-49. Media investigated included soil/sediment, surface water, and groundwater.

The initial investigations included a Phase III RI investigation in 1998 and a field investigation in 2000. The results of these investigations are summarized in the Final Remedial Investigation Report

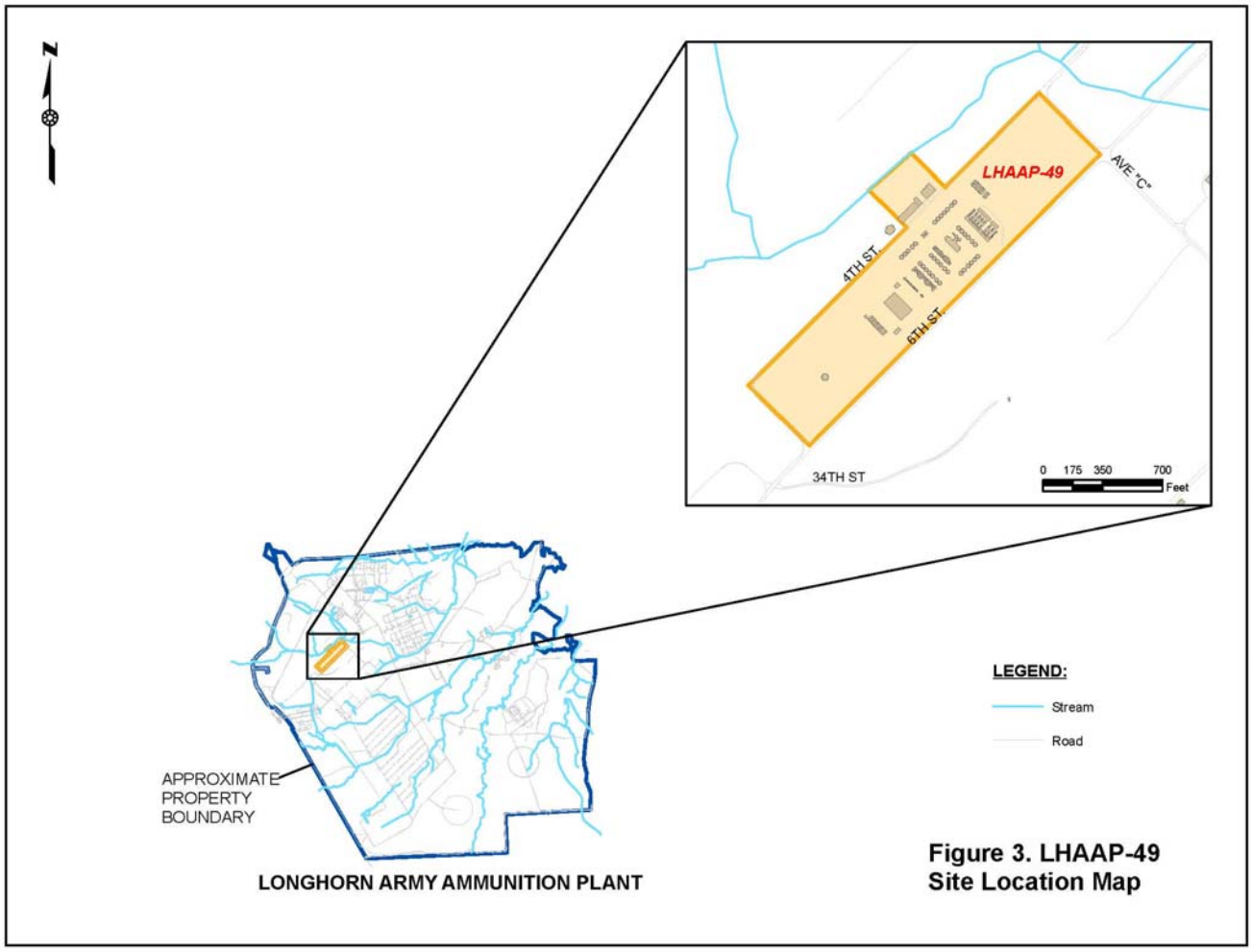


Figure 3. LHAAP-49 Site Location Map

Addendum – Group 2 Sites (Jacobs, 2002a).

During these 1998 and 2000 investigations, dioxins, explosives, metals/anions, polychlorinated biphenyls (PCBs), pesticides, perchlorate, semivolatile organic compounds (SVOCs), and volatile organic compounds (VOCs) were analyzed in soil and sediment samples collected at LHAAP-49. Explosives, PCBs, perchlorate and SVOCs were not detected in any of the soil samples collected. There were low scattered detections of pesticides/PCBs, dioxins, and one VOC (methylene chloride-a common laboratory contaminant) within the soil at LHAAP-49. Elevated levels of metals were detected in soil, including lead and mercury. No principal threat source material was identified at LHAAP-49.

In groundwater, PCBs, pesticides, perchlorate, explosives, and SVOCs were not detected in the samples. Detected results in groundwater included metals, dioxins, and VOCs. Specifically, antimony, arsenic, chromium, selenium, and nitrate/nitrite were detected above their maximum contaminant levels (MCLs) in one or more samples.

The baseline human health risk assessment (BHHRA) (Jacobs, 2002b) was performed using the data presented in the Group 2 RI (Jacobs, 2002a). The BHHRA identified metals as chemicals of potential concern (COPCs) for soil and groundwater at LHAAP-49.

Additional investigations were conducted after the BHHRA was completed. These investigations include sampling by the USFWS (2 surface soil samples) in 2002,

sampling by the U.S. Army Corps of Engineers (USACE) (13 surface soil samples) in 2004, and sampling by Shaw Environmental & Infrastructure, Inc. (Shaw) (22 soils samples, 4 sediment samples, and 1 surface water sample) in 2004. The soil investigations after the BHHRA focused on two metals with elevated concentrations – lead and mercury.

Additional groundwater sampling was conducted in May 2005, October 2007, October and December 2008, and February, April, and May 2009 to address concerns about metals and nitrate/nitrite concentrations in groundwater that sometimes exceed MCLs. The sampling effort included four direct push technology (DPT) borings, installing five monitoring wells, and collecting 14 groundwater samples. Elevated nitrate/nitrite concentrations were associated with a shallow well that was typically dry. Groundwater from a properly screened replacement well did not exceed the nitrate/nitrite MCL. Chromium was associated with corrosion of a well; the well was replaced with different construction material and the chromium did not recur. Other parameters (e.g., arsenic, manganese, antimony) were found to be naturally occurring and/or associated with solid particulates that were drawn into the samples. Evaluation of these results, together with the 1998 and 2000 groundwater results, demonstrated that the occurrences of metals and nitrate/nitrite above their MCLs are not issues that require further action at the site (Shaw, 2009), and no chemicals of concern (COCs) were identified for the groundwater at LHAAP-49.

SCOPE AND ROLE OF PROPOSED REMEDY

The proposed remedy at LHAAP-49 is No Action. This remedy will ensure protection of human health and the environment.

SUMMARY OF SITE RISKS

The reasonably anticipated future use of this site is nonresidential use as part of the Caddo Lake National Wildlife Refuge. This anticipated future use is based on a Memorandum of Agreement (MOA) (U.S. Army, 2004) between the USFWS and the U.S. Army. That MOA documents the transfer process of the LHAAP acreage to USFWS to become the Caddo Lake National Wildlife Refuge. Presently the Caddo Lake National Wildlife Refuge occupies approximately 7,000 acres of the former installation. The property must be kept as a National Wildlife Refuge unless there is an act of Congress which removes the parcel or the land is exchanged in accordance with the National Wildlife Refuge System Administration Act of 1966 and the National Wildlife Refuge System Act Amendments of 1974.

Human Health Risks

The baseline risk assessment estimates the risk the site poses if no action is taken. It provides the basis for taking an action and identifies the contaminants and exposure pathways that need to be addressed by a remedial action. The applicable receptor scenario for future use as a national wildlife refuge is a hypothetical future maintenance worker. For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the carcinogen and are expressed in scientific notation (e.g., 1×10^{-6}). USEPA's acceptable risk range for site-related exposures is 1×10^{-4} to

1×10^{-6} i.e., one-in-ten thousand to one-in-one million. The potential for non-cancer effects is expressed by a ratio of the exposure to the toxicity. An individual chemical ratio less than 1 indicates that toxic non-cancer effects from that chemical are unlikely. A non-cancer hazard index (HI) is calculated when all the ratios for the individual chemicals are summed. An HI greater than 1 indicates that site-related exposures may present a risk to human health. Thus, an HI of less than 1 is acceptable since toxic non-cancer effects are unlikely.

Using the data presented in the RI, the cancer risk and the non-cancer HI were calculated based on a hypothetical future maintenance worker's exposure to the site environmental media (e.g., soil and groundwater) under an industrial scenario in the BHHRA.

The contaminants in soil were determined to be within acceptable limits for a hypothetical future maintenance worker under the industrial scenario. Shaw combined the 2002 data set from the BHHRA with data subsequently collected by USFWS, USACE, and Shaw, and found that the new data did not cause the exposure concentrations to increase.

During the 2004 sampling, two soil sample locations at LHAAP-49 were found to have mercury concentrations that were markedly higher than soil samples elsewhere within LHAAP-49. In 2008, to address TCEQ hotspot concerns, Shaw removed soil in the vicinity of these two sample locations to a depth of 1.0 feet below ground surface and backfilled the area with clean soil. Shaw completed these activities in October 2008 (Shaw, 2009).

The groundwater was determined to have an acceptable cancer risk that equaled the upper value of the acceptable range under an industrial scenario with the exposure route of drinking the water or using the water for hand washing and showering. The dioxins through the dermal pathway were responsible for elevating the cancer risk to the upper limit of the acceptable range, though the risk is still acceptable.

The non-cancer HI for groundwater was 2, which exceeded the acceptable level of 1, but no individual COPC had a hazard quotient greater than 1. Several chemicals had occasional MCL exceedances. These are antimony, arsenic, chromium, nitrate/nitrite, and selenium. These COPCs were evaluated in the Site Evaluation Report (Shaw, 2009) with the following findings:

- Antimony was not detected in recent results using current sampling methodologies.
- Arsenic and selenium are naturally occurring under local groundwater conditions.
- Although chromium was detected above its MCL in two wells, evaluation of data suggests that the chromium contamination is associated with corrosion of the wells. Because the well casing and screen contain limited mass of chromium, the impact to groundwater quality caused by well corrosion is unlikely to be widespread, as documented by the installation and testing of 49WW06, a well of polyvinyl chloride construction.
- Nitrate/nitrite, which exceeded its MCL at one well, was no longer found at elevated levels when the well was replaced with one properly screened across the shallow groundwater zone.

As a result of these considerations of both the MCL exceedances and the slightly elevated HI associated with groundwater

COPCs at LHAAP-49, no COCs were identified for the groundwater at LHAAP-49.

The potential for contamination to migrate from soil to groundwater was also evaluated (Shaw, 2009). The COPCs identified in soil were lead, mercury, and vanadium. Since former facilities at LHAAP-49 were operational in World War II, soil contaminants have had more than 60 years to potentially migrate from the surface soil to the groundwater; however, there are no lead, mercury, or vanadium concerns in the groundwater. Vertical migration of the chemicals with the most elevated concentrations in soil (lead and mercury) was also examined using a computer model. The results demonstrated that these chemicals would not adversely impact groundwater.

Because the risk assessment was based on the reasonably anticipated future use as a national wildlife refuge, Texas Administrative Code requires that a notification be filed in the county disclosing that the site is suitable for nonresidential use.

Ecological Risks

The ecological risk for LHAAP-49 was addressed in the BERA (Shaw, 2007). For the BERA, the entire installation was divided into three large sub-areas (i.e., the Industrial Sub-Area, Waste Sub-Area, and Low Impact Sub-Area) for the terrestrial evaluation. The individual sites at LHAAP were grouped into one of these sub-areas, which were delineated based on commonalities of historic use, habitat type, and spatial proximity to each other. Conclusions for individual sites and the potential for detected chemicals to adversely affect the environment were made in the context of the overall conclusions of the sub-area in which the site falls. Site LHAAP-49 lies within the Industrial Sub-Area.

The BERA evaluated potential ecological risk to a number of endpoint receptors, as well as terrestrial plant and invertebrate communities. Endpoint receptors were evaluated using a food chain model that estimated a daily dose intake, which was subsequently compared with toxicity reference values to generate a hazard quotient. Terrestrial communities were evaluated through comparisons of detected concentrations to conservative benchmarks. Multiple lines of evidence (e.g., spatial distribution of concentrations, etc.) were also considered. After evaluating all lines of evidence, the BERA concluded that the potential for ecological risk was sufficiently low at the Industrial Sub-Area, and that no further evaluation for ecological receptors was required (Shaw, 2007). Therefore, no action is needed at LHAAP-49 for the protection of ecological receptors.

DESCRIPTION OF "NO ACTION" REMEDY

No action is proposed for this site. This recommendation is based on the existing data and determination of no unacceptable risk to human health or ecological receptors (Jacobs, 2002; Shaw, 2007, Shaw, 2009). A Record of Decision (ROD) based on this recommendation will allow this site to be removed from the list of LHAAP environmental sites requiring additional effort by the U.S. Army. The recommendation for no action is consistent with the criteria required under CERCLA.

The risk assessment was based on nonresidential use. Therefore, notification will be filed with Harrison County, as required by 30TAC§335.566, stating that

LHAAP-49 is considered suitable for nonresidential use, and five year reviews will be required. Limited monitoring will take place in the form of Letters of Certification from the Army (or the transferee) to TCEQ every five years to document that the use of the site remains consistent with nonresidential use scenarios.

Based on information currently available, the U.S. Army believes that the No Action remedy is protective of human health and the environment.

COMMUNITY PARTICIPATION

The U.S. Army, USEPA, and TCEQ provide information regarding LHAAP-49 through public meetings and the Administrative Record file for the facility. The public is encouraged to gain a more comprehensive understanding of this site and the associated Superfund activities.

The dates for the public comment period, the date, location, and time of the public meeting, and the locations of the Administrative Record files are provided on the front page of this Proposed Plan.

Any significant changes to the Proposed Plan, as presented in this document, will be identified and explained in the ROD.

Primary Reference Documents for LHAAP-49

Jacobs Engineering Group Inc. (Jacobs), 2002a, *Final Remedial Investigation Report Addendum for the Group 2 Sites Remedial Investigation Report, Site 49, St. Louis, Missouri, February*.

Jacobs, 2002b, *Draft Baseline Human Health and Screening Ecological Risk Assessment for the Group 2 Sites (Sites 12, 17, 18/24, 29, 32, 49, Harrison Bayou and Caddo Lake), Longhorn Army Ammunition Plant, Karnack, Texas*, February.

Shaw Environmental & Infrastructure, Inc. (Shaw), 2007, *Installation-Wide Baseline Ecological Risk Assessment, Longhorn Army Ammunition Plant, Karnack, Texas, Volume I: Step 3 Report*, Houston, Texas, November.

Shaw, 2009, *Final Site Evaluation Report, LHAAP-49, Former Acid Storage Area, Longhorn Army Ammunition Plant, Karnack, Texas,* June.

U.S. Army, 2004, *Memorandum of Agreement Between the Department of the Army and the Department of the Interior for the Interagency Transfer of Lands at the Longhorn Army Ammunition Plant for the Caddo Lake National Wildlife Refuge, Harrison County, Texas,* Signed by the Department of the Interior on April 27, 2004 and the Army on April 29, 2004.

U.S. Army, 2005, Evaluations of Select Metals Detections in the West Further Investigation Area, Longhorn Army Ammunition Plant, Texas, Revision 1, February.

USEPA, 2005, Letter from C. Villarreal to R. Zeiler, Re: Longhorn Army Ammunition Plant (LHAAP), Evaluation of the West Further Investigation Area, April 18.

GLOSSARY OF TERMS

Administrative Record — The body of reports, official correspondence, and other documents that establish the official record of the analysis, cleanup, and final closure of a CERCLA site.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) — This law authorizes the Federal Government to respond directly to releases (or threatened releases) of hazardous substances that may be a danger to public health, welfare, or the environment. The U.S. Army currently has the lead responsibility for these activities at LHAAP.

Environmental Media — Major environmental categories that surround or contact humans, animals, plants, and other organisms (e.g., surface water, ground water, soil or air) and through which chemicals or pollutants move.

Exposure — Contact of an organism with a chemical or physical agent. Exposure is quantified as the amount of the agent available at the exchange boundaries of the organism (e.g., skin, lung, digestive tract, etc.) and available for absorption.

Groundwater — Underground water that fills pores in soil or openings in rocks to the point of saturation.

Hazard Index — The hazard index is the sum of the hazard quotients for all chemicals to which an individual is exposed. A hazard index value of 1.0 or less indicates that no adverse non-cancer human health effects are expected to occur. Each hazard quotient is a comparison of an estimated chemical intake (dose) with a reference dose level below which adverse health effects are unlikely. Each hazard quotient is expressed as the ratio of the estimated intake (numerator) to the reference dose (denominator). The value is used to evaluate the potential for non-cancer health effects, such as organ damage, from chemical exposures.

Maximum Contaminant Level (MCL) — The maximum contaminant level is based on the National Primary Drinking Water Standard. The TCEQ has adopted MCLs as the regulatory cleanup levels for both industrial and residential uses. Any compound with an MCL that is detected in groundwater samples is evaluated by comparing the results to the associated MCL.

Proposed Plan — A report for public comment highlighting the key factors that form the basis for the selection of the preferred remediation alternative.

Remedial Action — The actual construction or implementation phase of a Superfund site cleanup that follows remedial design.

Risk Assessment — An analysis of the potential adverse health effects (current and future) caused by hazardous substances at a site in the absence of any actions to control or mitigate these releases (i.e., under an assumption of no action). The assessment contributes to decisions regarding appropriate response alternatives.

Superfund — The common name used for CERCLA; also referred to as the Trust Fund. The Superfund Program was established to help fund cleanup of hazardous waste sites. It also allows legal action to force those responsible for sites to clean them up.

ACRONYMS

BERA	Baseline Ecological Risk Assessment
BHHRA	baseline human health risk assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	chemical of concern
COPC	chemical of potential concern
FFA	Federal Facility Agreement
HI	hazard index
LHAAP	Longhorn Army Ammunition Plant
MCL	maximum contaminant level
MOA	Memorandum of Agreement
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
PCB	polychlorinated biphenyl
RI	remedial investigation
ROD	record of decision
Shaw	Shaw Environmental & Infrastructure, Inc.
SVOC	semivolatile organic compound
TCEQ	Texas Commission on Environmental Quality
TNT	trinitrotoluene
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound

USE THIS SPACE TO WRITE YOUR COMMENTS

Your input on the Proposed Plan for LHAAP-49 is important to the U.S. Army. Comments provided by the public are valuable in helping the U.S. Army select a final remedy for these sites.

You may use the space below to write your comments, then fold and mail to Dr. Rose M. Zeiler, P.O. Box 220, Ratcliff, Arkansas 72951. Comments must be postmarked by February 23, 2010. If you have questions about the comment period, please contact Dr. Rose M. Zeiler directly at 479.635.0110. Those with electronic communications capabilities may submit their comments to the U.S. Army via Internet at the following e-mail address: rose.zeiler@us.army.mil

FINAL
COMPLETION REPORT
NON-TIME-CRITICAL REMOVAL ACTION
AT THE FORMER PISTOL RANGE
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Shaw®

ON THE LINE

JANUARY 2010

Shaw® Shaw Environmental, Inc.

Date: ***January 12, 2010***

Project No.: ***117591***

TRANSMITTAL LETTER:

To: Mr. Aaron Williams

Address: US Army Corps of Engineers - Tulsa
CESWT-PP-M
1645 South 101st East Ave
Tulsa, Oklahoma 74128

Re: **Final Completion Report Non-Time-Critical Removal Action at the Former Pistol Range**
Longhorn Army Ammunition Plant, Karnack, Texas
Contract No. W912QR-04-D-0027/DS02

For: Review ____ As Requested ____ Approval ____ Corrections ____ Submittal x Other ____

Item No:	***No. of Copies***	***Date:***	***Document Title***
1	2	January 2010	**Final Completion Report Non-Time-Critical Removal Action at the Former Pistol Range** Longhorn Army Ammunition Plant, Karnack, Texas

Aaron – Enclosed please find the final version of the above-named report for your records.

The document has been distributed according to the list below. Please call if any questions or comments.

Sincerely:

Praveen Srivastav
Project Manager

Distribution List:
Ms. Rose Zeiler – BRAC-LHAAP
Mr. Matthew Mechenes – AEC
Ms. Fay Duke – TCEQ (2)
Mr. Steve Tzhone – EPA (2)
Mr. Dale Vodak - TCEQ
Mr. Paul Bruckwicki –USFWS
Mr. John Lambert/Scottie Fiehler (distributed by A. Williams) - USACE

1401 Enclave Parkway, Houston, Texas 77077 ***Phone: (281) 531-3100/Fax: (281) 531-3143***

DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
RATCLIFF, AR 72951

January 12, 2010

DAIM-ODB-LO

Mr. Stephen Tzhone
US Environmental Protection Agency
Superfund Division (6SF-AT)
1445 Ross Avenue
Dallas, TX 75202-2733

Re: Final Completion Report Non-Time-Critical Removal Action at the Former Pistol Range Longhorn Army Ammunition Plant, Karnack, Texas, January 2010

Dear Mr. Tzhone,

The above-referenced document is being transmitted to you for your files. The document has been prepared by Shaw Environmental, Inc. (Shaw) on behalf of the Army as part of Shaw's performance based contract for the facility.

The point of contact for this action is the undersigned. I ask that Praveen Srivastav, Shaw's Project Manager, be copied on any communications related to the project. I may be contacted at 479-635-0110, or by email at rose.zeiler@us.army.mil.

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Rose M. Zeiler, Ph.D.
Longhorn AAP Site Manager

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DEPARTMENT OF THE ARMY
LONGHORN ARMY AMMUNITION PLANT
POST OFFICE BOX 220
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January 12, 2010

DAIM-ODB-LO

Ms. Fay Duke (MC-136)
SSDAT/Superfund Section
Remediation Division
Texas Commission on Environmental Quality
12100 Park 35 Circle, Bldg D
Austin, TX 78753

Re: Final Completion Report Non-Time-Critical Removal Action at the Former Pistol Range, Longhorn Army Ammunition Plant, Karnack, Texas, January 2010
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M. Mechenes, USAEC, MD
P. Srivastav, Shaw, Houston, TX (for project files)

Comments on Draft Final Completion Report
Non-Time-Critical Removal Action at the Former Pistol Range (published November 2009)
Longhorn Army Ammunition Plant, Karnack, Texas

December 2009

Reviewer: TCEQ and USEPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D, E or X[1]	Response	A or D[2]
1			**Per December 11, 2009, email from F. Duke/TCEQ to R. Zeiler/BRAC:** The TCEQ has completed its review of the Draft Final Completion Report for the Non-Time Critical Removal Action at the Former Pistol Range. We have no comments. We do, however, have one suggestion. We recommend including the documentation that waste disposal is in compliance with the off-site rule (e.g. confirmation from EPA's Regional Offsite-Contact that the facility meets the criteria for receiving CERCLA waste).	- - - C	Shaw contacted the EPA Regional Off-site Contact to receive a short statement that will be added to the document. The following text will be added to the end of the first paragraph of Section 2.2.6: "Both facilities were approved to accept waste from CERCLA sites, as demonstrated by the compliance statement from EPA, which is included in **Appendix C**. A copy of the EPA statement is attached, and will be inserted at the end of Appendix C. [see report]	A
2			**Per December 21, 2009, email from F. Duke/TCEQ to R. Zeiler/BRAC:** The TCEQ has completed its review of the *Draft Final Proposed Plan for the Formal Pistol Range (December 8, 2009).* We have no comments and agreed with the proposed no further action remedy. However, we have a comment which requires clarification. It is stated on Page 3 that the removal action began with abandonment of a monitoring well (PRWW01). The draft final Non-time Critical Removal Action Completion Report did not contain any information relating to this activities. Please clarify.	E	While this comment was made in an email regarding the Draft Final Proposed Plan, it is best addressed within the Completion Report. Abandonment of PRWW01 is briefly mentioned in the first paragraph of Section 2.2.1 of the draft final Completion Report. The following sentence will be added to that paragraph: "That activity was performed in compliance with State of Texas requirements; a copy of the plugging report is provided in **Appendix D**." A copy of the plugging report is attached and will be inserted at the front of Appendix D. [see report]	A

Comments on Draft Final Completion Report
Non-Time-Critical Removal Action at the Former Pistol Range (published November 2009)
Longhorn Army Ammunition Plant, Karnack, Texas

December 2009

Reviewer: TCEQ and USEPA
Respondent: Shaw Environmental, Inc.

1. Respondent Concurs (C), Does Not Concur (D), Takes Exception (E), or Delete (X).
2. Commentor Agrees (A) with response, or Does not Agree (D) with response.

Comment #	Page	Section/ Paragraph	Comment	C, D, E or X[1]	Response	A or D[2]
3			- - -	- - -	On page 1-2, the name of Appendix D will be corrected from "Survey Details" to "Field Reports." "- PRWW01 Plugging Report" will be added as the first bullet item on the cover sheet for Appendix D.	
- - -			**Per December 21, 2009, email from S. Tzhone/USEPA to R. Zeiler/BRAC:** The EPA has completed its review of the *Draft Final Completion Report Non-Time Critical Removal Action at the Former Pistol Range (November 2009, email 11/12/2009)* and has no comments. Please finalize and submit the Final Completion Report.	- - -		

FINAL

COMPLETION REPORT
NON-TIME-CRITICAL REMOVAL ACTION
AT THE FORMER PISTOL RANGE
LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

Prepared for

U.S. Army Corps of Engineers
Tulsa District
1645 South 101st Avenue
Tulsa, Oklahoma

Prepared by

Shaw Environmental, Inc.
1401 Enclave Parkway, Suite 250
Houston, Texas 77077

MARC No. W912QR-04-D-0027, Shaw Project No. 117591
Task Order No. DS02

January 2010

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Acronyms and Abbreviations

bgs	below ground surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	code of federal regulations
DoD	Department of Defense
EE/CA	Engineering Evaluation/Cost Analysis
GPS	global positioning system
GWTP	groundwater treatment plant
HDPE	high density polyethylene
LHAAP	Longhorn Army Ammunition Plant
MARC	Multiple Award Remediation Contract
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MSC	medium-specific concentration
NPL	National Priorities List
PPE	personal protective equipment
RAO	removal action objectives
RCI	reactivity, corrosivity and ignitability
RCRA	Resource Conservation and Recovery Act
SAI-Ind	soil MSC for industrial use based on inhalation, ingestion, and dermal contact
Shaw	Shaw Environmental, Inc.
TCEQ	Texas Commission on Environmental Quality
TCLP	toxicity characteristic leaching procedure
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOCs	volatile organic compounds

1.0 Introduction

1.1 General

The U.S. Army Corps of Engineers (USACE) contracted Shaw Environmental, Inc. (Shaw), under the Multiple Award Remediation Contract (MARC) Number W912QR-04-D-0027, Task Order No. DS02, to perform remediation activities associated with closure of multiple sites at the former Longhorn Army Ammunition Plant (LHAAP) in Karnack, Texas. As part of the activities associated with task order DS02, Shaw prepared an Engineering Evaluation/Cost Analysis (EE/CA) for the former Pistol Range at LHAAP (Shaw, 2009a) and recommended implementation of a non-time-critical removal action. This Closure Report documents the completion of that removal action as proposed in the *Final Action Memorandum for Former Pistol Range and LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Harrison County, Texas* (Shaw, 2009b).

LHAAP is a Federally-owned facility. The U.S. Army Environmental Command provides funding and oversight for the environmental response activities at LHAAP. The U.S. Army Base Realignment and Closure (BRAC) Division is the lead U.S. Department of Defense (DoD) organization for execution of environmental response at the LHAAP.

The removal action at the former Pistol Range was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, and the National Oil and Hazardous Substances Contingency Plan (40 Code of Federal Regulations [CFR] Part 300). The objective of the removal action was as follows: Minimize the potential for human contact with soil containing lead at concentrations that could adversely affect future maintenance workers. This objective was used as the basis for formulating and evaluating removal alternatives and selecting the action that was implemented. The selection process is supported by documents contained in the Administrative Record for LHAAP, which is available at the Marshall Public Library.

The removal action activities included excavation of contaminated soil, disposal of soil, confirmation soil sampling, and site restoration. Excavation activities were initiated on August 4, 2009 and were completed on August 19, 2009. Transport and disposal activities were completed on October 6, 2009.

1.2 Report Purpose, Objectives and Organization

This report discusses the removal action activities performed at the former Pistol Range. The report documents the work conducted in accordance with the requirements of the action

memorandum (Shaw, 2009b), the Removal Action Work Plan (Shaw, 2009c), and observations made during execution of the removal action. The objective of this report is to summarize removal action field activities.

Section 1.0 presents the objectives, scope, background, and general field procedures. **Section 2.0** discusses the removal action activities implemented for the former Pistol Range. **Section 3.0** presents a list of references used in preparing this report. Tables and figures referenced in these sections are included at the end of each section. This report also provides the following information as appendices:

- **Appendix A** Photographs
- **Appendix B** Data Evaluation and Analytical Reports
- **Appendix C** Waste Documentation
- **Appendix D** Field Reports

1.3 Background

LHAAP is located in central-east Texas in the northeastern corner of Harrison County, approximately 14 miles northeast of Marshall, Texas. The closed facility occupies approximately 1,400 of its original 8,416 acres between State Highway 43 in Karnack, Texas, and the western shore of Caddo Lake. Caddo Lake is a large freshwater lake that bounds LHAAP to the north and east. The eastern fence of LHAAP is 3.5 miles from the Texas-Louisiana state border (see **Figure 1-1**).

Due to releases of chemicals from historic operations at LHAAP, the facility was placed on the Superfund National Priorities List (NPL) on August 9, 1990. After being listed on the NPL, the U.S. Army, the USEPA, and the Texas Water Commission (currently known as the TCEQ) entered into a CERCLA Section 120 FFA for remedial activities at LHAAP. The FFA became effective December 30, 1991. LHAAP operated until 1997 when it was placed on inactive status and classified by the U.S. Army Armament, Munitions, and Chemical Command as excess property. Approximately 7,000 acres of the original LHAAP have been transferred to U.S. Fish and Wildlife Service (USFWS) as part of the Caddo Lake National Wildlife Refuge. The U.S. Army holds the remaining land while environmental restoration takes place in preparation for transfer to the USFWS.

The former Pistol Range is located in the southeastern portion of LHAAP, approximately 280 feet south of Avenue Q at the end of Robert Avenue (see **Figure 1-2**). The site is the eastern portion of a rectangular field and is approximately 110 feet north to south by 150 feet east to west (approximately 0.4 acres). The target area was a wooded slope at the eastern side of the site. The area was used as a small arms firing range by base security personnel as early as the 1950s and intermittently through 2004 for small arms qualification and recertification.

Preliminary field investigations were conducted at the Pistol Range in 1995, with subsequent site investigations in 2006 (soil sampling for site characterization) and 2007 (groundwater sampling and vertical delineation of soil contamination). The investigations showed that there had been no impact to groundwater, but identified areas where the soil was contaminated with lead at levels that exceed the TCEQ soil medium-specific concentration (MSC) for industrial use based on inhalation, ingestion, and dermal contact (SAI-Ind) (TCEQ, 2006).

The reasonably anticipated future use of the former Pistol Range is as part of the Caddo Lake National Wildlife Refuge (NWR). The applicable receptor scenario for future use as a national wildlife refuge is the hypothetical future maintenance worker. Once the former Pistol Range is transferred, the use will be consistent with the rest of the refuge. That includes the following activities: hunting, fishing, wildlife observation, wildlife photography, wildlife education, and wildlife interpretation.

1.4 Summary of Removal Action Activities

Field activities at the former Pistol Range included the removal of soil with contaminants above cleanup levels. Contaminated soil was excavated and properly disposed off site. Excavation activities were terminated at a depth where confirmation sampling results indicated that the cleanup level was achieved (see **Table 1-1**).

Field activities were performed in accordance with the requirements of the removal action work plan (Shaw, 2009c). The removal activities included the following items:

- Preliminary activities
- Site preparation
- Soil excavation
- Confirmation sampling
- Decontamination of equipment/personnel
- Waste management
- Site restoration
- Reporting

Photos were taken throughout the removal action and are included in **Appendix A**.

Table 1-1
Chemical of Concern and Cleanup Level

Chemical of Concern	Cleanup Level	Basis [1]
Lead	1,000 mg/kg	SAI-Ind

Notes and Abbreviations:

[1] Texas Commission on Environmental Quality, Updated Examples of Standard No. 2, Appendix II Medium-Specific Concentrations (MSCs) dated March 31, 2006

mg/kg - milligrams per kilogram

SAI-Ind - Soil MSC for industrial use based on inhalation, ingestion, and dermal contact

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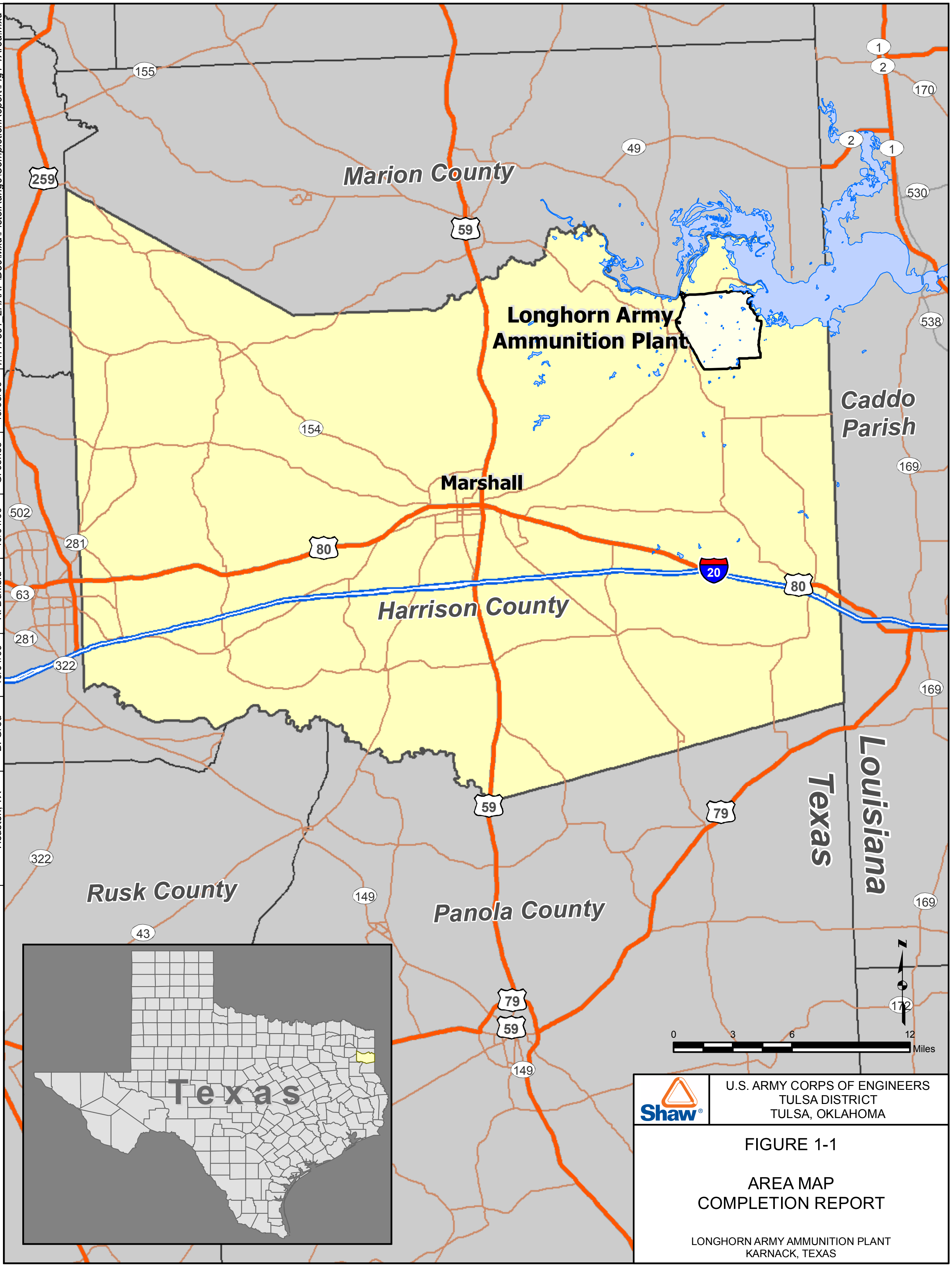

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U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-1

AREA MAP
COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

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Houston, TX	B. Grod	10/01/09	R. Duffield	10/01/09	G. Jones	10/06/09

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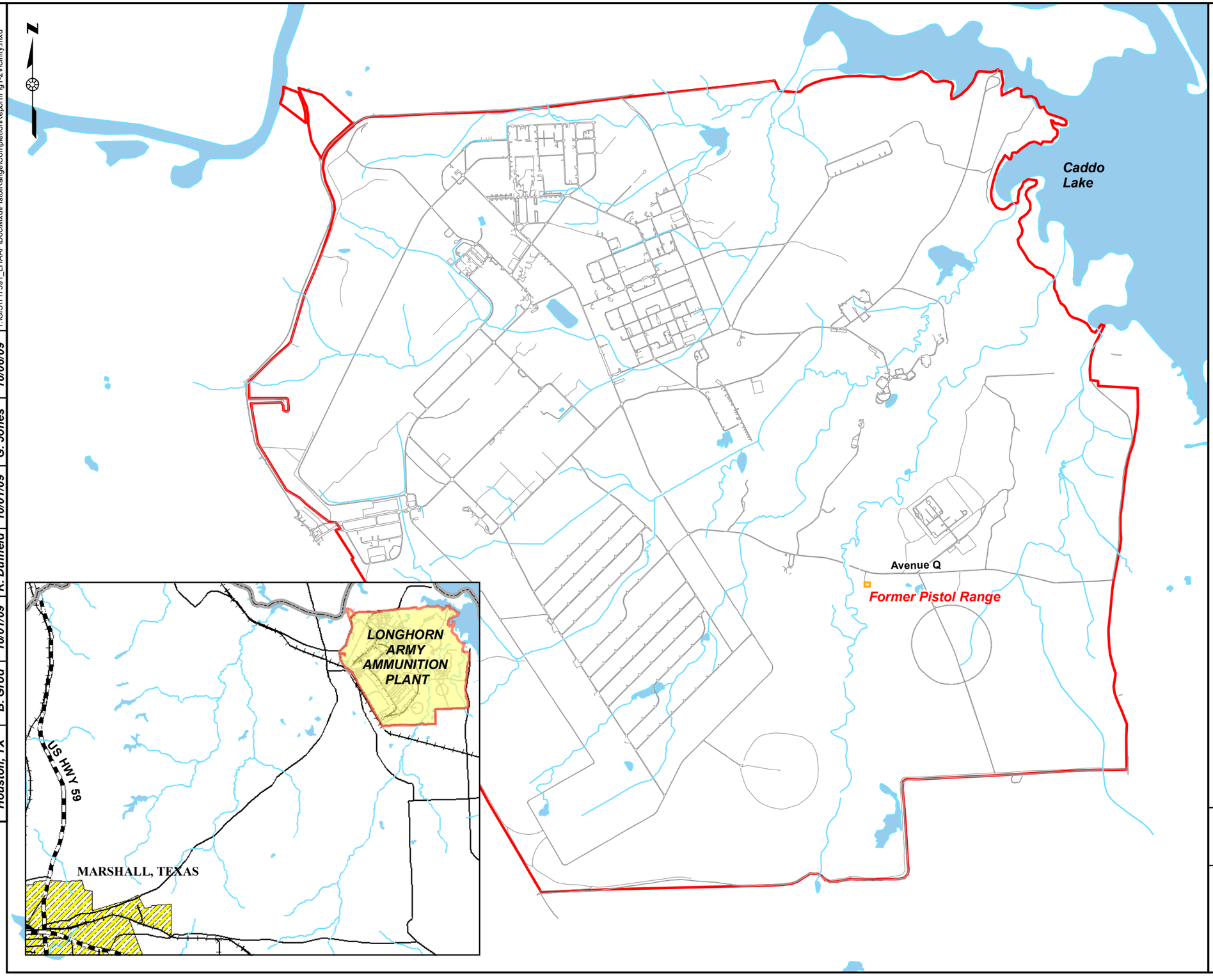

LEGEND

- Stream
- Road
- Site
- Lake
- LHAAP Boundary

0 1,300 2,600 5,200 Feet

Shaw®

U.S. ARMY CORPS OF ENGINEERS
TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 1-2

SITE VICINITY MAP
COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

2.0 Removal Action

2.1 Project Objective

The removal action objective (RAO) for the former Pistol Range can be described as follows:

- Minimize the potential for human contact with soil containing lead at concentrations that could adversely affect future maintenance workers.

To achieve this objective, excavation and off-site disposal of surface and near surface soil contaminated with lead exceeding industrial use levels (**Table 1-1**) was recommended (Shaw, 2009a). The U.S. Army approved that alternative and USEPA and TCEQ concurred.

The removal action is consistent with the intended future use of the LHAAP as a national wildlife refuge and is intended to be the final action for the former Pistol Range. The proposed limits of the excavation area are presented in **Figure 2-1**.

2.2 Summary of Field Activities

Field activities at the former Pistol Range followed the Removal Action Work Plan (Shaw, 2009c).

2.2.1 Preliminary Activities

In preparation for the anticipated removal action, the well at the former Pistol Range (PRWW01) was plugged and abandoned in June 2009. That activity was performed in compliance with State of Texas requirements; a copy of the plugging report is provided in **Appendix D**.

Prior to commencing the removal action, a preconstruction meeting was held on August 4, 2009 between the U.S. Army, U.S. Fish and Wildlife Service, USEPA and Shaw project management and field personnel to discuss general issues regarding implementation and schedule of field activities. Equipment and supplies were received prior to the start of work.

2.2.2 Site Preparation

Robert Avenue, the access road to the former Pistol Range, was wet and soft at the time of the removal action. Local road bed material was delivered and the access road was graded to allow equipment to use it. The site was inspected and the planned excavation area marked with wooden stakes topped with surveyor ribbon. Stake locations were established by surveyors, Landmark Consultants, Inc. on August 4, 2009, at the coordinates indicated on **Figure 2-1**. Shrubs and vegetation smaller than four inches in diameter were cleared using the excavator (see Photo 2 in **Appendix A**) and placed to one side in a brush pile that will be allowed to decay naturally.

2.2.3 Soil Excavation

Soil excavation proceeded as planned. Soil near the excavation area was not firm enough to place roll-off containers near the excavation for direct loading. The roll-offs were placed along Avenue Q. Soil was excavated using the mechanical excavator, placed on unexcavated contaminated areas or plastic sheeting in a temporary stockpile area, and then transferred using a mechanical loader into the roll-off containers parked along Avenue Q.

The completed excavation area matched the planned excavation area, and the excavation depth was approximately as anticipated, though some areas were excavated deeper to remove visible bullet fragments and the root area of a large tree (in FL04) was excavated only superficially to avoid killing the tree. All visible lead fragments were removed. Excavation depths were measured at each of the marked corners of the excavation and ranged from 1 to 2 feet below ground surface (bgs) (see **Figure 2-2**). The average excavation depth was approximately 1.4 feet bgs measured at the corners, but deeper in the interior of the excavation. The in-place volume of material excavated was estimated to be 140 cubic yards, and the excavated soil filled 14 roll-off containers. This amount is slightly more than the volume in the work plan, primarily due to overexcavation areas with visible bullet fragments.

Excavation and soil handling activities were performed in modified Level D personal protective equipment, using standard health and safety practices to minimize airborne particle generation and exposure pathways that might place workers at risk. Air monitoring was conducted in work areas, and airborne emissions did not exceed acceptable levels.

The excavation limits were within the original survey stakes and no additional survey was conducted.

2.2.4 Confirmation Sampling

Confirmation sampling was conducted concurrently with excavation activities to document that the remaining soils met the established cleanup level. Ten composite samples (five on the floor, four from the sides, and one field duplicate) were collected during excavation activities and sent to an off-site laboratory (Microbac in Marietta, Ohio) for lead analysis. Confirmation sample results ranged from 6.53 to 607 milligrams per kilogram (mg/kg) – all less than the cleanup level of 1,000 mg/kg. **Table 2-1** lists the confirmation sample results, and **Figure 2-2** depicts the areas of the excavation that were sampled along with the sample results. **Appendix B** contains the analytical data reports.

Floor samples were labeled PRCSFL01 through 05. The PR stands for the former Pistol Range, the CS stands for confirmation sample, FL stands for floor sample, and the two digit number is used to indicate which area of the excavation floor was sampled.

Side wall samples were labeled PRCSWBD, DF, FH, and HB. The PR stands for the former Pistol Range, the CS stands for confirmation sample, W stands for wall sample, and the two characters at the end correspond to corners of the excavation area to indicate which section of the excavation wall was sampled (between the two corners).

2.2.5 Decontamination of Equipment/Personnel

Decontamination of personnel consisted of removing disposable personal protective equipment (PPE) and washing prior to meal breaks and at the end of the work day.

Decontamination of equipment consisted of removing visible contamination (soil, mud, or debris) by mechanical means. Then, the equipment was transferred via trailer to the permanent decontamination station located at the on-site groundwater treatment plant (GWTP) at LHAAP-18/24, which can accommodate large equipment. The road leading from the site to the GWTP was also checked for soil residue and none was observed.

2.2.6 Waste Management

Excavated soil was held in roll-off containers near the road and covered to prevent rain and wind from moving the material. Three waste characterization samples (composites to represent a group of roll-off boxes) were collected from the roll-off containers as required by the disposal facility. The first sample represented six roll-off containers, and the second and third samples each represented four roll-off containers. Sample analysis for toxicity characteristic leaching procedure (TCLP), volatile organic compounds (VOC)s, TCLP RCRA Metals, and reactivity, corrosivity, and ignitability (RCI) was conducted by an off-site laboratory (Microbac). The sample results indicated that lead was detected in the TCLP leachate in all three samples, though at levels below TCLP limits. Individual grab samples from each roll-off container were then tested for TCLP RCRA metals, and RCI per the landfill's request. Soil in ten roll-off containers was classified as non-hazardous material and was disposed at a RCRA Subtitle D facility. The non-hazardous roll-off containers were shipped to Allied Waste – Woolworth Rd Landfill in Keithville, Louisiana, and the excavated soil was disposed of there. Soil in four roll-off containers had lead results above the TCLP RCRA toxicity limit of 5 mg/L and required disposal at a RCRA Subtitle C facility. These containers of hazardous soil were shipped to the U.S. Ecology-Texas landfill in Robstown, Texas. **Table 2-2** presents the waste characterization sample results. The waste characterization sample analytical reports are included in **Appendix B**. The waste disposal and transport documentation is included in **Appendix C**. Both facilities were approved to accept waste from CERCLA sites, as demonstrated by the compliance statement from EPA, which is included in **Appendix C**.

Decontamination liquids were pumped as necessary from the permanent decontamination area and sent to the GWTP.

Miscellaneous waste, such as PPE and plastic sheeting, was placed in roll-off containers and disposed with excavated soil, or placed in plastic bags for subsequent disposal at a municipal solid waste landfill along with miscellaneous waste from other areas of LHAAP.

2.2.7 Site Restoration

After the excavation was completed and all confirmation sample results showed lead concentrations below the cleanup level, the site was restored by backfilling with 168 cubic yards of clean soil, covering the sloped area of the excavation with erosion control fabric, and seeding and mulching the entire disturbed area. The backfill was obtained from a subcontracted off-site source. One sample was collected from this backfill source and tested to verify that the material was clean. **Table 2-3** presents the backfill source sample results. Backfill was placed in several lifts on August 19, 2009, using a bulldozer. Compaction was incidental to placement. The area was graded to match the surrounding topography to ensure positive drainage. Erosion control fabric was placed over the steep embankment area, and the entire disturbed area was seeded and mulched. A final site inspection by representatives from the U.S. Army and the USEPA was performed on August 20, 2009 and found the site restoration to be adequate and complete.

2.2.8 Reporting

This Completion Report documents the removal action performed at the former Pistol Range. The report includes site drawings, photographs of the work performed (**Appendix A**), sample data (**Appendix B**), and copies of manifests and other waste disposal documentation (**Appendix C**). A surveyor's report documenting the horizontal limits of the excavation area, and Daily Quality Control Reports documenting the activities conducted at the Pistol Range are included in **Appendix D**. Additional field documents recording air monitoring, sample collection forms, supply shipping records, daily safety meetings and equipment inspections were not included in this Closure Report, but were filed with the general project files at the Shaw office in Houston, Texas.

2.3 Conclusion

The concentrations of lead in the sidewalls and floors of the excavation at the former Pistol Range were below the cleanup levels. Thus, the RAO to remove soils at the former Pistol Range that contained lead above the cleanup level was achieved.

Table 2-1
Soil Confirmation Sample Results

Location	Sample	Date	Purpose	Lead Result (mg/kg)	Qual	VQ	RC	DF
FL01	PRCSFL01	8/6/09	REG	56				10
FL02	PRCSFL02	8/6/09	REG	16.5				1
FL03	PRCSFL03	8/6/09	REG	6.53				1
FL03	PRCSFL03-QC	8/6/09	FD	8.7				1
FL04	PRCSFL04	8/5/09	REG	9.98				1
FL05	PRCSFL05	8/6/09	REG	47.3		JI	08A	10
WBD	PRCSWBD	8/6/09	REG	14.1				1
WDF	PRCSWDF	8/5/09	REG	20.1		JI	08A,08B	10
WFH	PRCSWFH	8/6/09	REG	607				50
WHB	PRCSWHB	8/6/09	REG	10.4				1

Notes and Abbreviations:

08A - MS and/or MSD recovery not within control limits (accuracy)

08B - % RPD outside acceptance limits (precision)

DF - dilution factor

JI - The analyte was positively identified; the reported value is the estimated concentration of the constituent detected in the sample analyzed. Bias in sample result is indeterminate.

mg/kg - milligrams per kilogram

Qual - laboratory data qualifier

RC - reason code for qualifiers

VQ - data validation qualifier

Table 2-2
Waste Characterization Sample Results

	Location	DS01					DS02					DS03				
	Sample	PRDS01					PRDS02					PRDS03				
	Date	8/6/09					8/7/09					8/7/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
TCLP VOCs - 8260																
1,1-Dichloroethene	µg/L	5	U	U		10	5	U	U		10	5	U	U		10
1,2-Dichloroethane	µg/L	2.5	U	U		10	2.5	U	U		10	2.5	U	U		10
Benzene	µg/L	1.25	U	U		10	1.25	U	U		10	1.25	U	U		10
Carbon tetrachloride	µg/L	2.5	U	U		10	2.5	U	U		10	2.5	U	U		10
Chlorobenzene	µg/L	1.25	U	U		10	1.25	U	U		10	1.25	U	U		10
Chloroform	µg/L	1.25	U	U		10	1.25	U	U		10	1.25	U	U		10
Methyl ethyl ketone	µg/L	25	U	U		10	25	U	U		10	25	U	U		10
Tetrachloroethene	µg/L	2.5	U	U		10	2.5	U	U		10	2.5	U	U		10
Trichloroethene	µg/L	2.5	U	U		10	2.5	U	U		10	2.5	U	U		10
Vinyl chloride	µg/L	2.5	U	U		10	2.5	U	U		10	2.5	U	U		10
TCLP RCRA Metals																
Arsenic, TCLP	mg/L	0.1	U	U		1	0.1	U	U		1	0.1	U	U		1
Barium, TCLP	mg/L	1.06				1	1.03				1	1.47				1
Cadmium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1	0.025	U	U		1
Chromium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1	0.025	U	U		1
Lead, TCLP	mg/L	2.26				1	0.737	J	J	15	1	0.574	J	J	15	1
Selenium, TCLP	mg/L	0.4	U	U		1	0.4	U	U		1	0.4	U	U		1
Silver, TCLP	mg/L	0.05	U	U		1	0.05	U	U		1	0.05	U	U		1
Mercury, TCLP	mg/L	0.001	U	U		1	0.001	U	U		1	0.001	U	U		1
RCI																
Ignitability	Deg C	72	>			1	72	>			1	70	>			1
Corrosivity pH	Std Units	5.7				1	5.07				1	5.61				1
Reactivity, Cyanide	mg/kg	4.99	U	U		1	4.97	U	U		1	4.98	U	U		1
Reactivity, Sulfide	mg/kg	50	U	U		1	50	U	U		1	50	U	U		1

Table 2-2
Waste Characterization Sample Results

	Location	RO542					RO628					RO674				
	Sample	PRR0542GR					PRR0628GR					PRR0674GR				
	Date	8/7/09					8/7/09					8/7/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
TCLP VOCs - 8260																
1,1-Dichloroethene	µg/L															
1,2-Dichloroethane	µg/L															
Benzene	µg/L															
Carbon tetrachloride	µg/L															
Chlorobenzene	µg/L															
Chloroform	µg/L															
Methyl ethyl ketone	µg/L															
Tetrachloroethene	µg/L															
Trichloroethene	µg/L															
Vinyl chloride	µg/L															
TCLP RCRA Metals																
Arsenic, TCLP	mg/L	0.1	U	U		1	0.1	U	U		1	0.1	U	U		1
Barium, TCLP	mg/L	1.05				1	1.06				1	1.03				1
Cadmium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1	0.025	U	U		1
Chromium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1	0.025	U	U		1
Lead, TCLP	mg/L	0.482	J	J	15	1	0.485	J	J	15	1	*23.5*				1
Selenium, TCLP	mg/L	0.4	U	U		1	0.4	U	U		1	0.4	U	U		1
Silver, TCLP	mg/L	0.05	U	U		1	0.05	U	U		1	0.05	U	U		1
Mercury, TCLP	mg/L	0.001	U	U		1	0.001	U	U		1	0.001	U	U		1
RCI																
Ignitability	Deg C	72	>			1	68	>			1	72	>			1
Corrosivity pH	Std Units	5.55				1	5.54				1	5.67				1
Reactivity, Cyanide	mg/kg	25	U	U		1	24.9	U	U		1	24.9	U	U		1
Reactivity, Sulfide	mg/kg	50	U	U		1	50	U	U		1	50	U	U		1

Table 2-2
Waste Characterization Sample Results

	Location	RO701					RO731					RO758				
	Sample	PRR0701GR					PRR0731GR					PRR0758GR				
	Date	8/6/09					8/6/09					8/6/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
TCLP VOCs - 8260																
1,1-Dichloroethene	µg/L															
1,2-Dichloroethane	µg/L															
Benzene	µg/L															
Carbon tetrachloride	µg/L															
Chlorobenzene	µg/L															
Chloroform	µg/L															
Methyl ethyl ketone	µg/L															
Tetrachloroethene	µg/L															
Trichloroethene	µg/L															
Vinyl chloride	µg/L															
TCLP RCRA Metals																
Arsenic, TCLP	mg/L	0.1	U	U		1	0.1	U	U		1	0.1	U	U		1
Barium, TCLP	mg/L	0.939				1	0.862				1	1.13				1
Cadmium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1	0.025	U	U		1
Chromium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1	0.025	U	U		1
Lead, TCLP	mg/L	2.64				1	0.253	J	J	15	1	3.78				1
Selenium, TCLP	mg/L	0.4	U	U		1	0.4	U	U		1	0.4	U	U		1
Silver, TCLP	mg/L	0.05	U	U		1	0.05	U	U		1	0.05	U	U		1
Mercury, TCLP	mg/L	0.001	U	U		1	0.001	U	U		1	0.001	U	U		1
RCI																
Ignitability	Deg C	70	>			1	72	>			1	69	>			1
Corrosivity pH	Std Units	6.44				1	5.57				1	5.54				1
Reactivity, Cyanide	mg/kg	24.9	U	U		1	24.9	U	U		1	24.9	U	U		1
Reactivity, Sulfide	mg/kg	50	U	U		1	50	U	U		1	50	U	U		1

Table 2-2
Waste Characterization Sample Results

	Location	RO766					RO859					RO906				
	Sample	PRR0766GR					PRR0859GR					PRR0906GR				
	Date	8/7/09					8/6/09					8/6/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
TCLP VOCs - 8260																
1,1-Dichloroethene	µg/L															
1,2-Dichloroethane	µg/L															
Benzene	µg/L															
Carbon tetrachloride	µg/L															
Chlorobenzene	µg/L															
Chloroform	µg/L															
Methyl ethyl ketone	µg/L															
Tetrachloroethene	µg/L															
Trichloroethene	µg/L															
Vinyl chloride	µg/L															
TCLP RCRA Metals																
Arsenic, TCLP	mg/L	0.1	U	U		1	0.1	U	U		1	0.1	U	U		1
Barium, TCLP	mg/L	1.12				1	0.92				1	1.04				1
Cadmium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1	0.025	U	U		1
Chromium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1	0.025	U	U		1
Lead, TCLP	mg/L	0.488	J	J	15	1	3.09				1	0.985	J	J	15	1
Selenium, TCLP	mg/L	0.4	U	U		1	0.4	U	U		1	0.4	U	U		1
Silver, TCLP	mg/L	0.05	U	U		1	0.05	U	U		1	0.05	U	U		1
Mercury, TCLP	mg/L	0.001	U	U		1	0.001	U	U		1	0.001	U	U		1
RCI																
Ignitability	Deg C	75	>			1	76	>			1	74	>			1
Corrosivity pH	Std Units	5.53				1	5.48				1	5.54				1
Reactivity, Cyanide	mg/kg	24.9	U	U		1	24.9	U	U		1	24.9	U	U		1
Reactivity, Sulfide	mg/kg	50	U	U		1	50	U	U		1	50	U	U		1

Table 2-2
Waste Characterization Sample Results

	Location	RO959					RO1022					RO1096				
	Sample	PRR0959GR					PRR01022GR					PRR01096GR				
	Date	8/7/09					8/7/09					8/6/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
TCLP VOCs - 8260																
1,1-Dichloroethene	µg/L															
1,2-Dichloroethane	µg/L															
Benzene	µg/L															
Carbon tetrachloride	µg/L															
Chlorobenzene	µg/L															
Chloroform	µg/L															
Methyl ethyl ketone	µg/L															
Tetrachloroethene	µg/L															
Trichloroethene	µg/L															
Vinyl chloride	µg/L															
TCLP RCRA Metals																
Arsenic, TCLP	mg/L	0.1	U	U		1	0.1	U	U		1	0.1	U	U		1
Barium, TCLP	mg/L	0.9				1	1.19				1	1.08				1
Cadmium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1	0.025	U	U		1
Chromium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1	0.025	U	U		1
Lead, TCLP	mg/L	0.541	J	J	15	1	1.45				1	*5.15*				1
Selenium, TCLP	mg/L	0.4	U	U		1	0.4	U	U		1	0.4	U	U		1
Silver, TCLP	mg/L	0.05	U	U		1	0.05	U	U		1	0.05	U	U		1
Mercury, TCLP	mg/L	0.001	U	U		1	0.001	U	U		1	0.001	U	U		1
RCI																
Ignitability	Deg C	75	>			1	75	>			1	68	>			1
Corrosivity pH	Std Units	5.75				1	5.44				1	5.8				1
Reactivity, Cyanide	mg/kg	25	U	U		1	25	U	U		1	24.9	U	U		1
Reactivity, Sulfide	mg/kg	50	U	U		1	50	U	U		1	50	U	U		1

Table 2-2
Waste Characterization Sample Results

	Location	RO1111					RO1113				
	Sample	PRR01111GR					PRR01113GR				
	Date	8/7/09					8/7/09				
	Purpose	REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
TCLP VOCs - 8260											
1,1-Dichloroethene	µg/L										
1,2-Dichloroethane	µg/L										
Benzene	µg/L										
Carbon tetrachloride	µg/L										
Chlorobenzene	µg/L										
Chloroform	µg/L										
Methyl ethyl ketone	µg/L										
Tetrachloroethene	µg/L										
Trichloroethene	µg/L										
Vinyl chloride	µg/L										
TCLP RCRA Metals											
Arsenic, TCLP	mg/L	0.1	U	U		1	0.1	U	U		1
Barium, TCLP	mg/L	1.26				1	1.25				1
Cadmium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1
Chromium, TCLP	mg/L	0.025	U	U		1	0.025	U	U		1
Lead, TCLP	mg/L	*17.4*				1	*38*				1
Selenium, TCLP	mg/L	0.4	U	U		1	0.4	U	U		1
Silver, TCLP	mg/L	0.05	U	U		1	0.05	U	U		1
Mercury, TCLP	mg/L	0.001	U	U		1	0.001	U	U		1
RCI											
Ignitability	Deg C	68	>			1	68	>			1
Corrosivity pH	Std Units	5.58				1	5.61				1
Reactivity, Cyanide	mg/kg	24.9	U	U		1	25	U	U		1
Reactivity, Sulfide	mg/kg	50	U	U		1	50	U	U		1

Notes:

15 - Quantitation

> - greater than

µg/L - micrograms per Liter

Deg C - degrees Celsius

DF - dilution factor

J - The analyte was positively identified; the reported value is the estimated concentration.

mg/L - milligrams per Liter

Qual - laboratory data qualifier

RC - reason code for qualifiers

RCI - reactivity, corrosivity, and ignitability

RCRA - Resource Conservation and Recovery Act

Results in ***Bold Italic*** exceed the TCLP limits.

Std Units - standard units

TCLP - toxicity characteristic leaching procedure

U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.

VOCs - volatile organic compounds

VQ - data validation qualifier

Table 2-3
Backfill Soil Sample Results

	Location	L01					SITE 1-TP					SITE 1-TP				
	Sample	PRCL01					SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/5/09					8/9/09					8/9/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
VOCs - 8260B																
1,1,1,2-Tetrachloroethane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,1,1-Trichloroethane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,1,2,2-Tetrachloroethane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,1,2-Trichloroethane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,1-Dichloroethane	µg/kg	1.2	U	U		1	1.28	U	U		1	1.25	U	U		1
1,1-Dichloroethene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,1-Dichloropropene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,2,3-Trichlorobenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,2,3-Trichloropropane	µg/kg	1.2	U	U		1	1.28	U	U		1	1.25	U	U		1
1,2,4-Trichlorobenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,2,4-Trimethylbenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,2-Dibromo-3-Chloropropane	µg/kg	2.39	U	U		1	2.57	U	U		1	2.5	U	U		1
1,2-Dibromoethane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,2-Dichlorobenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,2-Dichloroethane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,2-Dichloropropane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,3,5-Trimethylbenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,3-Dichlorobenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,3-Dichloropropane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
1,4-Dichlorobenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
2,2-Dichloropropane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
2-Butanone	µg/kg	2.99	U	U		1	3.21	U	U		1	3.12	U	U		1
2-Chloroethyl Vinyl Ether	µg/kg	2.39	U	U		1	2.57	U	U		1	2.5	U	U		1
2-Chlorotoluene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1

Table 2-3
Backfill Soil Sample Results

	Location	L01					SITE 1-TP					SITE 1-TP				
	Sample	PRCL01					SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/5/09					8/9/09					8/9/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
2-Hexanone	µg/kg	2.99	U	U		1	3.21	U	U		1	3.12	U	U		1
4-Chlorotoluene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
4-Methyl-2-Pentanone	µg/kg	2.99	U	U		1	3.21	U	U		1	3.12	U	U		1
Acetone	µg/kg	5.98	U	U		1	6.42	U	U		1	6.24	U	U		1
Benzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Bromobenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Bromochloromethane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Bromodichloromethane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Bromoform	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Bromomethane	µg/kg	1.2	U	U		1	1.28	U	U		1	1.25	U	U		1
Carbon Disulfide	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Carbon Tetrachloride	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Chlorobenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Chlorodibromomethane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Chloroethane	µg/kg	1.2	U	U		1	1.28	U	U		1	1.25	U	U		1
Chloroform	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Chloromethane	µg/kg	2.39	U	U		1	2.57	U	U		1	2.5	U	U		1
Cis-1,2-Dichloroethene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Cis-1,3-Dichloropropene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Dibromomethane	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Dichlorodifluoromethane	µg/kg	1.2	U	U		1	1.28	U	U		1	1.25	U	U		1
Ethylbenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Hexachlorobutadiene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Isopropylbenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U	15	1
M-,P-Xylene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1

Table 2-3
Backfill Soil Sample Results

	Location	L01					SITE 1-TP					SITE 1-TP				
	Sample	PRCL01					SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/5/09					8/9/09					8/9/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Methylene Chloride	µg/kg	1.2	U	U		1	1.28	U	U		1	1.25	U	U		1
Naphthalene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
N-Butylbenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
N-Propylbenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
O-Xylene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
P-Isopropyltoluene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Sec-Butylbenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Styrene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Tert-Butylbenzene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Tetrachloroethene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Toluene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Trans-1,2-Dichloroethene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Trans-1,3-Dichloropropene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Trichloroethene	µg/kg	0.598	U	U		1	0.642	U	U		1	0.624	U	U		1
Trichlorofluoromethane	µg/kg	1.2	U	U		1	1.28	U	U		1	1.25	U	U		1
Vinyl Acetate	µg/kg	1.2	U	U		1	1.28	U	U		1	1.25	U	U		1
Vinyl Chloride	µg/kg	1.2	U	U		1	1.28	U	U		1	1.25	U	U		1

Table 2-3
Backfill Soil Sample Results

	Location	L01					SITE 1-TP					SITE 1-TP				
	Sample	PRCL01					SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/5/09					8/9/09					8/9/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
SVOCs - 8270C																
1,2,4-Trichlorobenzene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
1,2-Dichlorobenzene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
1,3-Dichlorobenzene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
1,4-Dichlorobenzene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
2,4,5-Trichlorophenol	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
2,4,6-Trichlorophenol	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
2,4-Dichlorophenol	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
2,4-Dimethylphenol	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
2,4-Dinitrophenol	µg/kg	447	U	U		1	496	U	U		1	478	U	U		1
2,4-Dinitrotoluene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
2,6-Dinitrotoluene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
2-Chloronaphthalene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
2-Chlorophenol	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
2-Methylnaphthalene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
2-Methylphenol	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
2-Nitroaniline	µg/kg	447	U	U		1	496	U	U		1	478	U	U		1
2-Nitrophenol	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
3,3'-Dichlorobenzidine	µg/kg	224	U	U		1	248	U	U		1	239	U	U		1
3-,4-Methylphenol	µg/kg	112	U	U		1	496	U	U		1	120	U	U		1
3-Nitroaniline	µg/kg	447	U	U		1	496	U	U		1	478	U	U		1
4,6-Dinitro-2-Methylphenol	µg/kg	447	U	U		1	124	U	U		1	478	U	U		1
4-Bromophenyl-Phenylether	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
4-Chloro-3-Methylphenol	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
4-Chloroaniline	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1

Table 2-3
Backfill Soil Sample Results

	Location	L01					SITE 1-TP					SITE 1-TP				
	Sample	PRCL01					SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/5/09					8/9/09					8/9/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
4-Chlorophenyl-Phenyl Ether	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
4-Nitroaniline	µg/kg	447	U	U		1	496	U	U		1	478	U	U		1
4-Nitrophenol	µg/kg	447	U	U		1	496	U	U		1	478	U	U		1
Acenaphthene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Acenaphthylene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Anthracene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Benzo(A)Anthracene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Benzo(A)Pyrene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Benzo(B)Fluoranthene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Benzo(G,H,I)Perylene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Benzo(K)Fluoranthene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Benzoic Acid	µg/kg	447	U	U		1	496	U	U		1	478	U	U		1
Benzyl Alcohol	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Bis(2-Chloroethoxy)Methane	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Bis(2-Chloroethyl)Ether	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Bis(2-Chloroisopropyl)Ether	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Bis(2-Ethylhexyl)Phthalate	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Butylbenzylphthalate	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Chrysene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Dibenzo(A,H)Anthracene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Dibenzofuran	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Diethylphthalate	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Dimethylphthalate	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Di-N-Butylphthalate	µg/kg	112	U	U		1	124	U	U		1	128	J	J		1
Di-N-Octylphthalate	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1

Table 2-3
Backfill Soil Sample Results

	Location	L01					SITE 1-TP					SITE 1-TP				
	Sample	PRCL01					SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/5/09					8/9/09					8/9/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
Fluoranthene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Fluorene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Hexachlorobenzene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Hexachlorobutadiene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Hexachlorocyclopentadiene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Hexachloroethane	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Indeno(1,2,3-Cd)Pyrene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Isophorone	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Naphthalene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Nitrobenzene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
N-Nitrosodiphenylamine	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
N-Nitrosodipropylamine	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Pentachlorophenol	µg/kg	447	U	U		1	496	U	U		1	478	U	U		1
Phenanthrene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Phenol	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1
Pyrene	µg/kg	112	U	U		1	124	U	U		1	120	U	U		1

Table 2-3
Backfill Soil Sample Results

	Location	L01					SITE 1-TP					SITE 1-TP				
	Sample	PRCL01					SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/5/09					8/9/09					8/9/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF
TAL Metals																
Aluminum, Total	mg/kg	3190				1	2890				1	685				1
Antimony, Total	mg/kg	0.467	U	U		1	0.472	U	U		1	0.454	U	U		1
Arsenic, Total	mg/kg	8.92				1	2.08	J	J	15	1	0.454	U	U		1
Barium, Total	mg/kg	7.78				1	7.15				1	14.7				1
Beryllium, Total	mg/kg	0.0911	J	J	15	1	0.0467	J	J	15	1	0.0558	J	J	15	1
Cadmium, Total	mg/kg	0.0935	U	U		2	0.0472	U	U		1	0.0454	U	U		1
Calcium, Total	mg/kg	34.5				1	6.69	J	J	15	1	97.7				1
Chromium, Total	mg/kg	13.4				1	14.5				1	1.57				1
Cobalt, Total	mg/kg	0.669	J	J	15	1	0.311	J	J	15	1	0.592	J	J	15	1
Copper, Total	mg/kg	1.23				1	2.56				1	1.33				1
Iron, Total	mg/kg	17200				1	10600	B			1	1370	B			1
Lead, Total	mg/kg	2.84				1	6.17				1	2.21	J	J	15	1
Magnesium, Total	mg/kg	96.5				1	49.3				1	35.9				1
Manganese, Total	mg/kg	10.1				1	18.3				1	128				1
Mercury, Total	mg/kg	0.0115	U	U		1	0.0127	U	U		1	0.0122	U	U		1
Nickel, Total	mg/kg	1.7	J	J	15	1	0.933	J	J	15	1	0.827	J	J	15	1
Potassium, Total	mg/kg	188				1	108				1	56.8				1
Selenium, Total	mg/kg	0.208	J	J	15	1	0.472	U	U		1	0.582	J	JB	15,06A	1
Silver, Total	mg/kg	0.398	J	J	15	1	0.259	J	J	15	1	0.227	U	U		1
Sodium, Total	mg/kg	5.21	J	J	15	1	4.72	U	U		1	4.63	J	J	15	1
Thallium, Total	mg/kg	0.0294				1	0.378	U	U		1	0.363	U	U		1
Vanadium, Total	mg/kg	43.1				1	19.8				1	2.49				1
Zinc, Total	mg/kg	12.5				1	3.03				1	3.45				1

Table 2-3
Backfill Soil Sample Results

	Location	L01					SITE 1-TP					SITE 1-TP				
	Sample	PRCL01					SITE 1-TP-BF					SITE 1-TP-TS				
	Date	8/5/09					8/9/09					8/9/09				
	Purpose	REG					REG					REG				
Analyte	Units	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF	Result	Qual	VQ	RC	DF

Notes and Abbreviations:

Backfill source for excavation was Tony Pczaikowski (TP).

15 - Quantitation

06A - Method or preparation blank

µg/kg - micrograms per kilogram

B - The concentration reported was detected in the associated method blank, trip blank, or equipment blank within 5X/10X the blank concentration.

DF - dilution factor

J - The analyte was positively identified; the reported value is the estimated concentration.

L01 material was used as roadbed material.

mg/kg - milligrams per kilogram

Qual - laboratory data qualifier

RC - reason code for qualifiers

SVOCs - semivolatile organic compounds

TAL - Target Analyte List

U - Not detected. The analyte was analyzed for, but not detected above the associated reporting limit.

VOCs - volatile organic compounds

VQ - data validation qualifier

00082497

LOCATION	EAST	NORTH
A	3314847.9	6951929.7
B	3314857.5	6951929.7
C	3314871.2	6951904.3
D	3314890.4	6951893.8
E	3314890.4	6951880.5
F	3314870.8	6951866.3
G	3314848.7	6951866.3
H	3314832.9	6951882.6
I	3314832.9	6951899.7
J	3314837.5	6951904.7

FILE PATH: T:\GIS\117591_LHAAP\Doc\Mxd\PistolRange\CompletionReport\Fig2-1Proposed.mxd

APPROVED BY	G. Jones	10/06/09
CHECKED BY	R. Duffield	10/01/09
DRAWN BY	B. Grod	10/01/09
OFFICE	Houston, TX	

LEGEND

- XRF Sediment Sample Location
- XRF Sample Location
- Lead Concentration Contour
- Stream
- Road
- Approximate Firing Line Location
- Excavation Area
- 25-foot Grid
- Target Embankment
- Pistol Range

NOTES:

1. LOD is level of detection.
2. Lead concentrations are in milligrams per kilogram.
3. 1,000 contour is boundary of area of removal.

0 20 40 80 Feet

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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-1

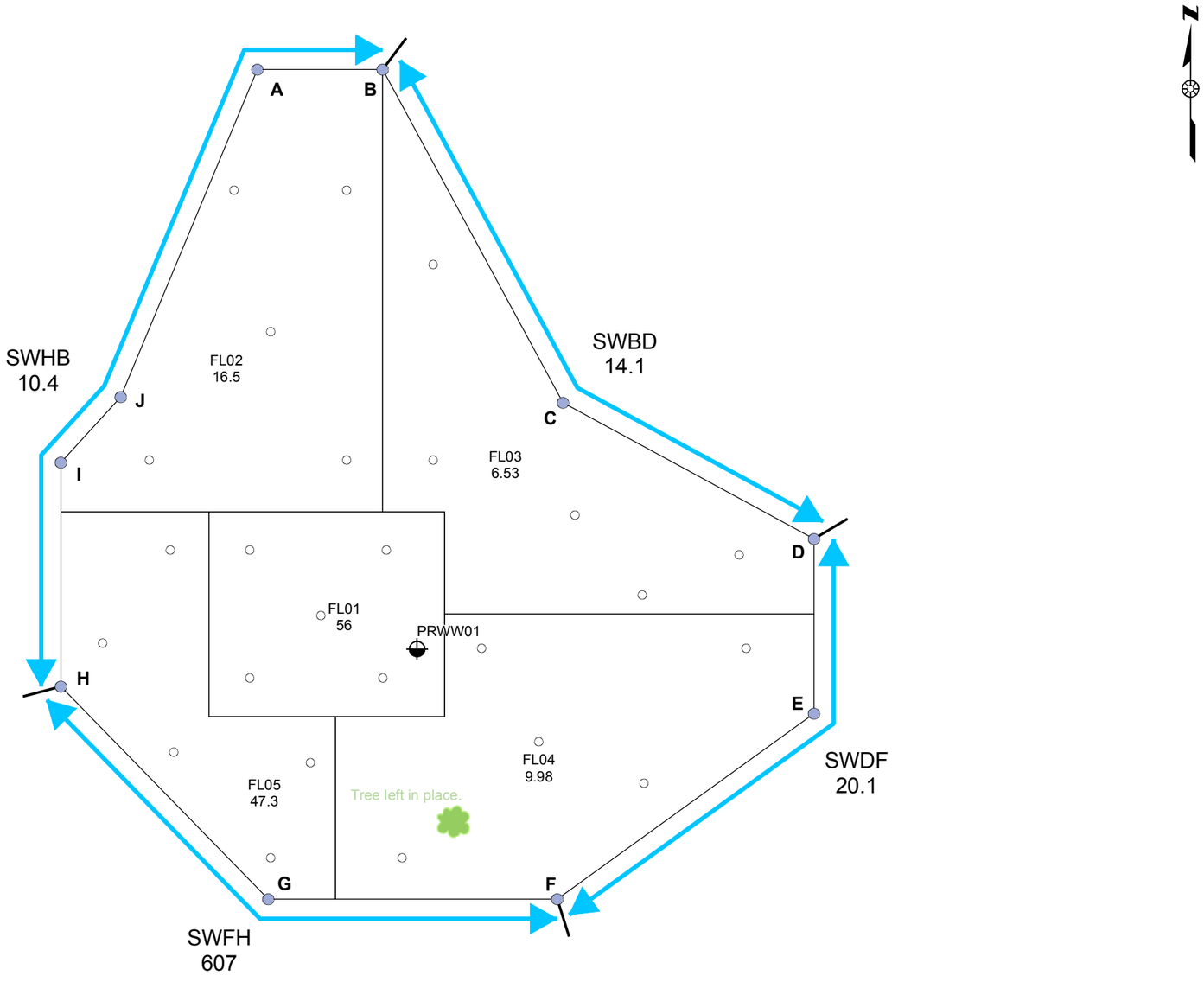
PROPOSED EXCAVATION AREA
COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

00082498

LOCATION	EAST	NORTH	EXCAVATION DEPTH (ft.)
A	3314847.9	6951929.7	1.00
B	3314857.5	6951929.7	1.33
C	3314871.2	6951904.3	1.33
D	3314890.4	6951893.8	1.50
E	3314890.4	6951880.5	1.33
F	3314870.8	6951866.3	1.25
G	3314848.7	6951866.3	1.33
H	3314832.9	6951882.6	1.33
I	3314832.9	6951899.7	1.33
J	3314837.5	6951904.7	2.00

Area (sq ft)	2,356
Average Depth (ft.)	1.40



LEGEND

- Abandoned Well (PRWW01)
- Individual Grab Location for Composite Floor Sample
- Sidewall with Sample Name and Lead Result
- Floor Area with Sample Name and Lead Result

SWHB - Wall Sample ID with lead
10.4 concentration result in mg/kg

FL02 - Floor Sample ID with lead
16.5 concentration result in mg/kg.

NOTES:

1. Results are presented in milligrams per kilogram (mg/kg)
2. Locations were surveyed and corners staked prior to excavation. The excavation area stayed within these points.

0 5 10 20 Feet

Shaw®

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TULSA DISTRICT
TULSA, OKLAHOMA

FIGURE 2-2

COMPLETED EXCAVATION AREA
COMPLETION REPORT

LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS

FILE PATH	T:\GIS\117591_LHAAP\Doc\Mxd\Pistol\Range\CompletionReport\Fig2-2Completed.mxd
APPROVED BY	G. Jones 10/06/09
CHECKED BY	R. Duffield 10/01/09
DRAWN BY	B. Grod 10/01/09
OFFICE	Houston, TX

3.0 References

Shaw Environmental, Inc. (Shaw), 2009a, *Final Engineering Evaluation/Cost Analysis, Former Pistol Range, Longhorn Army Ammunition Plant, Texas*, February.

Shaw, 2009b, *Final Action Memorandum for Former Pistol Range and LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Harrison County, Texas*, July.

Shaw, 2009c, *Final Removal Action Work Plan, Former Pistol Range and LHAAP-04, Former Pilot Wastewater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Harrison County, Texas*, August.

Texas Commission on Environmental Quality (TCEQ), 2006, Updated Examples of Standard No. 2, Appendix II Medium-Specific Concentration, March 31, 2006.

Appendix A

Photographs

PHOTO LOG

Photo No.	Date	Task and Description	View Direction
1	8/4/09	Access road construction	South
2	8/4/09	Site preparation	East
3	8/5/09	Embankment excavation	East
4	8/5/09	Loading rolloffs	East
5	8/6/09	Intermediate stockpile	North
6	8/6/09	Stockpile loadout	North
7	8/6/09	Finished excavation	East
8	8/7/09	Exc. Depth measurement – Stake A = 1.0 ft	North
9	8/7/09	Exc. Depth measurement – Stake B = 1.33 ft	North
10	8/7/09	Exc. Depth measurement – Stake C = 1.33 ft (Note: Stake not shown.)	East
11	8/7/09	Exc. Depth measurement – Stake D = 1.50 ft	East
12	8/7/09	Exc. Depth measurement – Stake E = 1.33 ft	East
13	8/7/09	Finished excavation	West
14	8/7/09	Finished excavation	West
15	8/7/09	Finished excavation	West
16	8/7/09	Finished excavation	West
17	8/7/09	Exc. Depth measurement – Stake F = 1.25 ft (Note: Stake not shown.)	East
18	8/7/09	Exc. Depth measurement – Stake G = 1.33 ft	South
19	8/7/09	Exc. Depth measurement – Stake H = 1.33 ft	West
20	8/7/09	Exc. Depth measurement – Stake I = 1.33 ft (Note: Stake not shown.)	West
21	8/7/09	Exc. Depth measurement – Stake J = 2.00 ft	West
22	8/8/09	Erosion control straw matting on embankment	East

PHOTO 1: Access Road Construction
DATE: 8/4/09 VIEW: South

PHOTO 2: Site Preparation
DATE: 8/4/09 VIEW: East

PHOTO 3: Embankment Excavation
DATE: 8/5/09 VIEW: East

PHOTO 4: Loading Rolloffs
DATE: 8/5/09 VIEW: East

PHOTO 5: Intermediate Stockpile
DATE: 8/609 VIEW: North

PHOTO 6: Stockpile Loadout
DATE: 8/6/09 VIEW: North

PHOTO 7: Finished Excavation
DATE: 8/6/09 VIEW: East

PHOTO 8: Exc. Depth Measurement – Stake A = 1.0 ft
DATE: 8/7/09 VIEW: North

PHOTO 9: Exc. Depth Measurement – Stake B = 1.33 ft
DATE: 8/7/09 VIEW: North

PHOTO 10: Exc. Depth Measurement – Stake C = 1.33 ft
(Note: Stake not shown.)
DATE: 8/7/09 VIEW: East

PHOTO 11: Exc. Depth Measurement – Stake D = 1.50 ft
DATE: 8/7/09 VIEW: East

PHOTO 12: Exc. Depth Measurement – Stake E = 1.33 ft
DATE: 8/7/09 VIEW: East

PHOTO 13: Finished Excavation
DATE: 8/7/09 VIEW: West

PHOTO 14: Finished Excavation
DATE: 8/7/09 VIEW: West

PHOTO 15: Finished Excavation
DATE: 8/7/09 VIEW: West

PHOTO 16: Finished Excavation
DATE: 8/7/09 VIEW: West

PHOTO 17: Exc. Depth Measurement – Stake F = 1.25 ft
(Notes: Stake Not Shown.)
DATE: 8/7/09 VIEW: East

PHOTO 18: Exc. Depth Measurement – Stake G = 1.33 ft
DATE: 8/7/09 VIEW: South

PHOTO 19: Exc. Depth Measurement – Stake H = 1.33 ft
DATE: 8/7/09 VIEW: West

PHOTO 20: Exc. Depth Measurement – Stake I = 1.33 ft
(Notes: Stake Not Shown.)
DATE: 8/7/09 VIEW: West

PHOTO 21: Exc. Depth Measurement – Stake J = 2.00 ft
DATE: 8/7/09 VIEW: West

PHOTO 22: Erosion Control Straw Matting on Embankment
DATE: 8/8/09 VIEW: East

Appendix B

Analytical Data Reports

LIST OF SAMPLES AND ASSOCIATED ANALYTICAL DATA REPORTS

Sample ID	Lab Report
PRCL01	L09080106
PRCSFL01	L09080143
PRCSFL02	L09080143
PRCSFL03	L09080143
PRCSFL03-QC	L09080143
PRCSFL04	L09080106
PRCSFL05	L09080143
PRCSWBD	L09080143
PRCSWDF	L09080106
PRCSWDF-MS	L09080106
PRCSWDF-MSD	L09080106
PRCSWFH	L09080143
PRCSWHB	L09080143
PRDS01	L09080144
PRDS01-LR	L09080144
PRDS02	L09080178
PRDS03	L09080178
PRR01022GR	L09080179
PRR01096GR	L09080145
PRR01111GR	L09080179
PRR01113GR	L09080179
PRR0542GR	L09080179
PRR0542GR-LR	L09080179
PRR0628GR	L09080179
PRR0674GR	L09080179
PRR0701GR	L09080145
PRR0701GR-LR	L09080145
PRR0731GR	L09080145
PRR0731GR-LR	L09080145
PRR0758GR	L09080145
PRR0766GR	L09080179
PRR0859GR	L09080145
PRR0906GR	L09080145
PRR0959GR	L09080179
SITE 1-TP-BF	L09080192
SITE 1-TP-TS	L09080192
SITE 2-BLM-BF	L09080192
SITE 2-BLM-TS	L09080192
SITE 3-ML-BFTS	L09080192

Note:
Samples were analyzed by Microbac Laboratories, Inc.

Microbac®

158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • http://www.microbac.com

Laboratory Report Number: L09080106

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	*Team Chemist/Data Specialist*	kalbertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	smossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	tlong@microbac.com
Amanda Fickiesen	*Client Services Specialist*	afickiesen@microbac.com
Annie Brown	*Client Services Specialist*	abrown@microbac.com

This report was reviewed on August 11, 2009.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on August 11, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 241 pages.

Look closer. Go further. Do more.

Microbac

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

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LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09080106
PREPARED FOR Shaw E I, Inc.
WORK ID:

1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09080106

CHAIN OF CUSTODY: The chain of custody number was (080509-01)

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 2 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 07-AUG-09
Stephanie Mossburg

Laboratory Data Package Cover Page

00082520

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 7, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309174
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 07, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309174
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 07, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082525

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

SHERI L. PFALZGRAF	Sheri L. Pfalzgraf	Chemist II	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG309187
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?		✓			1
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	✓				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG309187
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER#1 - Cadmium for client sample 03 was reported from the two fold dilution where the two fold post digestion spike was compliant.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082530

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

SHERI L. PFALZGRAF	Sheri L. Pfalzgraf	Chemist II	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

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Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309184
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309184
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082535

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

SHERI L. PFALZGRAF	Sheri L. Pfalzgraf	Chemist II	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

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Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	6020
Prep Batch Number(s):	WG309183
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	✓				
Were MS/MSD analyzed at the appropriate frequency?	✓				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		✓			1

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?		✓			1
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?		✓			2
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	✓				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	6020
Prep Batch Number(s):	WG309183
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER#1 - Sample 02 was chosen by the client for MS/MSD analysis. Samples 04 (MS) and 05(MSD) yielded a noncompliant recovery and a noncompliant RPD for lead.
ER#2 - Batch QC sample 04(MS) required dilution analysis in order to obtain a result for lead within the linear range. For consistency with batch QC sample 04(MS), reference sample 02 and batch QC sample 05(MSD) were also reanalyzed at dilutions for lead.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082540

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	August 7, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	WG309105
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	August 07, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?		✓			1
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?		✓			2
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT

ER# - Description

1) Dichlorodifluoromethane exceeded the upper advisory limit.

2) Dichlorodifluoromethane exceeded the upper advisory limit and vinyl acetate was below the lower advisory limit.

Footnotes:

(1) NA = Not applicable to method or project

(2) NR = Not reviewed

(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082544

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MICHAEL D. COCHRAN		Semivolatiles Lab Supervisor	August 7, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG309032
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 07, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	RPD(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		

Checklist ID: **40690**

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG309032
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 07, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?			✓		
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				1
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				

Checklist ID: **40690**

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG309032
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 07, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080106
Project Name:	798-LONGHORN
Method:	8270
Prep Batch Number(s):	WG309032
Reviewer Name:	MICHAEL D. COCHRAN
LRC Date:	August 07, 2009

EXCEPTIONS REPORT
ER# - Description
1. The alternate source standard yielded a %D for pentachlorophenol that was beyond the acceptance limit.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00082553

L09080106

08/11/09 16:16

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRCL01	L09080106-03	8260B	1	06-AUG-09

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082554

Sample Number: **L09080106-03**
Client ID: **PRCL01**
Matrix: **Soil**
Workgroup Number: **WG309105**
Collect Date: **08/05/2009 13:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **5030C/5035A**
Analytical Method: **8260B**
Analyst: **TMB**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS9**
Prep Date: **08/06/2009 12:18**
Cal Date: **07/21/2009 17:04**
Run Date: **08/06/2009 13:52**
File ID: **9M71259**
Percent Solid: **81.8**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Acetone	67-64-1		U	12.0	5.98
Benzene	71-43-2		U	5.98	0.598
Bromobenzene	108-86-1		U	5.98	0.598
Bromochloromethane	74-97-5		U	5.98	0.598
Bromodichloromethane	75-27-4		U	5.98	0.598
Bromoform	75-25-2		U	5.98	0.598
Bromomethane	74-83-9		U	12.0	1.20
2-Butanone	78-93-3		U	12.0	2.99
n-Butylbenzene	104-51-8		U	5.98	0.598
sec-Butylbenzene	135-98-8		U	5.98	0.598
tert-Butylbenzene	98-06-6		U	5.98	0.598
Carbon disulfide	75-15-0		U	5.98	0.598
Carbon tetrachloride	56-23-5		U	5.98	0.598
Chlorobenzene	108-90-7		U	5.98	0.598
Chlorodibromomethane	124-48-1		U	5.98	0.598
Chloroethane	75-00-3		U	12.0	1.20
2-Chloroethyl vinyl ether	110-75-8		U	12.0	2.39
Chloroform	67-66-3		U	5.98	0.598
Chloromethane	74-87-3		U	12.0	2.39
2-Chlorotoluene	95-49-8		U	5.98	0.598
4-Chlorotoluene	106-43-4		U	5.98	0.598
1,2-Dibromo-3-chloropropane	96-12-8		U	5.98	2.39
1,2-Dibromoethane	106-93-4		U	5.98	0.598
Dibromomethane	74-95-3		U	5.98	0.598
1,2-Dichlorobenzene	95-50-1		U	5.98	0.598
1,3-Dichlorobenzene	541-73-1		U	5.98	0.598
1,4-Dichlorobenzene	106-46-7		U	5.98	0.598
Dichlorodifluoromethane	75-71-8		U	12.0	1.20
1,1-Dichloroethane	75-34-3		U	5.98	1.20
1,2-Dichloroethane	107-06-2		U	5.98	0.598
1,1-Dichloroethene	75-35-4		U	5.98	0.598
cis-1,2-Dichloroethene	156-59-2		U	5.98	0.598
trans-1,2-Dichloroethene	156-60-5		U	5.98	0.598
1,2-Dichloropropane	78-87-5		U	5.98	0.598
1,3-Dichloropropane	142-28-9		U	5.98	0.598
2,2-Dichloropropane	594-20-7		U	5.98	0.598
cis-1,3-Dichloropropene	10061-01-5		U	5.98	0.598
trans-1,3-Dichloropropene	10061-02-6		U	5.98	0.598
1,1-Dichloropropene	563-58-6		U	5.98	0.598
Ethylbenzene	100-41-4		U	5.98	0.598
2-Hexanone	591-78-6		U	12.0	2.99
Hexachlorobutadiene	87-68-3		U	5.98	0.598
Isopropylbenzene	98-82-8		U	5.98	0.598
p-Isopropyltoluene	99-87-6		U	5.98	0.598
4-Methyl-2-pentanone	108-10-1		U	12.0	2.99
Methylene chloride	75-09-2		U	5.98	1.20
Naphthalene	91-20-3		U	12.0	0.598
n-Propylbenzene	103-65-1		U	5.98	0.598
Styrene	100-42-5		U	5.98	0.598
1,1,1,2-Tetrachloroethane	630-20-6		U	5.98	0.598
1,1,2,2-Tetrachloroethane	79-34-5		U	5.98	0.598
Tetrachloroethene	127-18-4		U	5.98	0.598
Toluene	108-88-3		U	5.98	0.598
1,2,3-Trichlorobenzene	87-61-6		U	5.98	0.598
1,2,4-Trichlorobenzene	120-82-1		U	5.98	0.598
1,1,1-Trichloroethane	71-55-6		U	5.98	0.598
1,1,2-Trichloroethane	79-00-5		U	5.98	0.598
Trichloroethene	79-01-6		U	5.98	0.598
Trichlorofluoromethane	75-69-4		U	12.0	1.20

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082555

Sample Number:	L09080106-03	PrePrep Method:	NONE	Instrument:	HPMS9
Client ID:	PRCL01	Prep Method:	5030C/5035A	Prep Date:	08/06/2009 12:18
Matrix:	Soil	Analytical Method:	8260B	Cal Date:	07/21/2009 17:04
Workgroup Number:	WG309105	Analyst:	TMB	Run Date:	08/06/2009 13:52
Collect Date:	08/05/2009 13:30	Dilution:	1	File ID:	9M71259
Sample Tag:	01	Units:	ug/kg	Percent Solid:	81.8

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,3-Trichloropropane	96-18-4		U	5.98	1.20
1,2,4-Trimethylbenzene	95-63-6		U	5.98	0.598
1,3,5-Trimethylbenzene	108-67-8		U	5.98	0.598
Vinyl acetate	108-05-4		U	12.0	1.20
Vinyl chloride	75-01-4		U	12.0	1.20
o-Xylene	95-47-6		U	5.98	0.598
m-,p-Xylene	136777-61-2		U	5.98	0.598

Surrogate	% Recovery	Lower	Upper	Qual
Dibromofluoromethane	104	80	120	
1,2-Dichloroethane-d4	101	80	120	
Toluene-d8	105	81	117	
4-Bromofluorobenzene	105	74	121	

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

Microbac Laboratories Inc.
VOA Preparation/Preservation/Extraction Log

Batch #: WG309141 **Analyst:** TMB

Method: 5030C/5035A **Run Date:** 08/06/2009 14:32

SAMPLE #	Fraction	Collected	Preserved	PCT-S	Tare Wt	Total Wt	Sample Wt	Water	MeOH	Vt	Comments
L09070652-01	A	07/24/09 00:00	08/06/09 14:32	100			4.99	5		5	
L09080106-03	A	08/05/09 13:30	08/06/09 12:18				5.11	5		5	

Comments:
1 = improperly sealed cap
2 = preserved out of hold
3 = effervesced
4 = preserved with NaHSO4
5 = preserved by freezing
6 = preserved in field

Analyst: Tiffany Bailey

VOA_EXT - Modified 05/22/2008
PDF ID: 1459551
Report generated: 08/06/2009 14:38

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS9 Dataset: 072109
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29518

Internal Standard: STD34089 Surrogate Standard: STD33925
CCV: STD33088 LCS: STD33082 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG307576

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	9M70932	RINSE	NA	7	1		07/21/09 08:46
2	9M70933	RINSE	NA	7	1		07/21/09 09:17
3	9M70934	WG307576-01 50ng BFB STD 8260	NA	7	1	STD33918	07/21/09 09:43
4	9M70935	WG307576-01 50ng BFB STD 8260	NA	7	1	STD33918	07/21/09 09:58
5	9M70936	WG307576-02 0.5ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 10:24
6	9M70937	WG307576-03 1ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 10:55
7	9M70938	WG307576-04 2ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 11:25
8	9M70939	WG307576-05 5ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 11:56
9	9M70940	WG307576-06 20ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 12:27
10	9M70941	WG307576-07 50ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 12:58
11	9M70942	WG307576-08 100ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 13:29
12	9M70943	WG307576-09 200ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 14:00
13	9M70944	WG307576-10 300ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 14:31
14	9M70945	RINSE	NA	7	1	STD34088	07/21/09 15:01
15	9M70946	WG307576-04 2ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 15:32
16	9M70947	WG307576-05 5ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 16:03
17	9M70948	WG307576-04 2ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 16:33
18	9M70949	WG307576-05 5ug/Kg STD 8260	NA	7	1	STD34088	07/21/09 17:04
19	9M70950	RINSE	NA	7	1		07/21/09 17:35
20	9M70951	RINSE	NA	7	1		07/21/09 18:06
21	9M70952	WG307576-11 20ug/Kg LCS STD 8260	NA	7	1	STD34082	07/21/09 18:37
22	9M70953	RINSE	NA	7	1		07/21/09 19:07

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			
File ID: 9M70934				
			Tune failed. DNR.	
7	X			
File ID: 9M70938				
			Replaced the trap and this point had low responces. DNR.	
8	X			
File ID: 9M70939				
			Replaced the trap and this point had low responces. DNR.	

Approved: July 22, 2009

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS9 Dataset: 072109
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29518

Internal Standard: STD34089 Surrogate Standard: STD33925
CCV: STD33088 LCS: STD33082 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG307576

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
15	X			
File ID: 9M70946				
			Archon added the ss. DNR.	
16	X			
File ID: 9M70947				
			Archon added the ss. DNR.	

Approved: July 22, 2009

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS9 Dataset: 080609
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29710

Internal Standard: STD34089 Surrogate Standard: STD34431
CCV: STD34357; STD24249 LCS: STD34248 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG309105

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	9M71248	RINSE	NA	7	1		08/06/09 08:34
2	9M71249	RINSE	NA	7	1		08/06/09 09:07
3	9M71250	WG309103-01 50ng BFB STD 8260	NA	7	1	STD33918	08/06/09 09:46
4	9M71251	WG309103-01 50ng BFB STD 8260	NA	7	1	STD33918	08/06/09 10:02
5	9M71252	WG309103-01 50ng BFB STD 8260	NA	7	1	STD33918	08/06/09 10:18
6	9M71253	WG309103-02 50ug/Kg CCV STD 8260	NA	7	1	ST34357	08/06/09 10:45
7	9M71254	WG309104-01 100ug/Kg A9 CCV STD 826	NA	7	1	ST34249	08/06/09 11:21
8	9M71255	WG309105-01 VBLK0806 BLANK STD 826	NA	7	1		08/06/09 11:52
9	9M71256	WG309105-02 20ug/Kg LCS STD 8260	NA	7	1	STD34248	08/06/09 12:22
10	9M71257	WG309105-03 20ug/Kg LCSDUP STD 826	NA	7	1	STD34248	08/06/09 12:52
11	9M71258	RINSE	NA	7	1		08/06/09 13:22
12	9M71259	L09080106-03 8260 5.11g	NA	7	1		08/06/09 13:52
13	9M71260	RINSE	NA	7	1		08/06/09 14:23
14	9M71261	L09070652-01 A 826-SPE 4.99g	NA	7	1		08/06/09 14:53
15	9M71262	WG309107-01 EXT BLK 100X 8260 5g/10m	NA	7	50		08/06/09 15:24
16	9M71263	RINSE	NA	7	1		08/06/09 15:54
17	9M71264	L09070652-01 2X 826-SPE D15.00g	NA	7	1		08/06/09 16:25
18	9M71265	RINSE	NA	7	1		08/06/09 16:55
19	9M71266	RINSE	NA	7	1		08/06/09 17:26
20	9M71267	L09070003-01 QMDL 826-SPE	NA	7	1	STD34481	08/06/09 17:57
21	9M71268	L09070004-01 QMDL 826-SPE	NA	7	1	STD34481	08/06/09 18:28
22	9M71269	L09080082-01 A 826-SPE 4.41g	NA	7	1		08/06/09 18:58
23	9M71270	L09080082-02 A 826-SPE 4.98g	NA	7	1		08/06/09 19:29
24	9M71271	L09080130-06 826-SPE 5.38g	NA	7	1		08/06/09 20:00
25	9M71272	L09080130-07 826-SPE 5.04g	NA	7	1		08/06/09 20:30
26	9M71273	L09080130-08 826-SPE 5.41g	NA	7	1		08/06/09 21:01
27	9M71274	RINSE	NA	7	1		08/06/09 21:32
28	9M71275	RINSE	NA	7	1		08/06/09 22:03
29	9M71276	RINSE	NA	7	1		08/06/09 22:33
30	9M71277	RINSE	NA	7	1		08/06/09 23:04
31	9M71278	RINSE	NA	7	1		08/06/09 23:35
32	9M71279	RINSE	NA	7	1		08/07/09 00:06
33	9M71280	RINSE	NA	7	1		08/07/09 00:36
34	9M71281	RINSE	NA	7	1		08/07/09 01:07

Approved: August 07, 2009

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS9 Dataset: 080609
Analyst1: TMB Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 5030C/5035A SOP: PAT01 Rev: 12

Maintenance Log ID: 29710

Internal Standard: STD34089 Surrogate Standard: STD34431
CCV: STD34357; STD24249 LCS: STD34248 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG309105

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
3	X			
File ID: 9M71250				
	Tune failed. DNR.			
4	X			
File ID: 9M71251				
	Tune failed. DNR. Changed the septa.			
14	X	2	Over Calibration Range	ace, 11-dce, mtbe, tce, eb, trans-13-dcp, acetronitrile
File ID: 9M71261				
20	X			
File ID: 9M71267				
	Rerun, didn't run at half the mdl. DNR.			
21	X			
File ID: 9M71268				
	Rerun, didn't run at half the mdl. DNR.			
22	X	1	Internal standard and surrogate standard failure	
File ID: 9M71269				
23	X	1	Internal standard and surrogate standard failure	
File ID: 9M71270				

Approved: August 07, 2009

Microbac Laboratories Inc.

Data Checklist

Date: 21-JUL-2009
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS9
Curve Workgroup: NA
Runlog ID: 29206
Analytical Workgroups: WG307576

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
22-JUL-2009
Tiffany Bailey

Secondary Reviewer:
22-JUL-2009

CHECKLIST1 - Modified 03/05/2008
Generated: JUL-22-2009 15:45:28

Microbac Laboratories Inc.

Data Checklist

Date: 06-AUG-2009
Analyst: TMB
Analyst: NA
Method: 8260
Instrument: HPMS9
Curve Workgroup: NA
Runlog ID: 29517
Analytical Workgroups: WG309105

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
07-AUG-2009
Tiffany Bailey

Secondary Reviewer:
07-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-07-2009 12:56:02

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00082566

Analytical Method: 8260B AAB#: WG309105

Login Number: L09080106

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRCL01	03	08/05/09							14		08/06/09	1	14	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1461062
Report generated 08/07/2009 12:54

Login Number: L09080106
Instrument Id: HPMS9
Workgroup (AAB#): WG309105

Method: 8260
CAL ID: HPMS9-21-JUL-09
Matrix: Soil

Sample Number	Dilution	Tag	1	2	3	4
L09080106-03	1.00	01	101	104	105	105
WG309105-01	1.00	01	99.7	102	104	104
WG309105-02	1.00	01	102	103	104	105
WG309105-03	1.00	01	102	102	104	105

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	80	-	120
3 - 4-Bromofluorobenzene	74	-	121
4 - Toluene-d8	81	-	117

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1461070
Report generated: 08/07/2009 12:54

METHOD BLANK SUMMARY

Login Number:	L09080106	Work Group:	WG309105
Blank File ID:	9M71255	Blank Sample ID:	WG309105-01
Prep Date:	08/06/09 11:52	Instrument ID:	HPMS9
Analyzed Date:	08/06/09 11:52	Method:	8260B
Analyst:	TMB		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309105-02	9M71256	08/06/09 12:22	01
LCS2	WG309105-03	9M71257	08/06/09 12:52	01
PRCL01	L09080106-03	9M71259	08/06/09 13:52	01

Report Name: BLANK_SUMMARY
PDF File ID: 1461063
Report generated 08/07/2009 12:54

Login Number:L09080106 Prep Date:08/06/09 11:52 Sample ID:WG309105-01
Instrument ID:HPMS9 Run Date:08/06/09 11:52 Prep Method:5030C/5035A
File ID:9M71255 Analyst:TMB Method:8260B
Workgroup (AAB#):WG309105 Matrix:Soil Units:ug/kg
Contract #:DACA56-94-D-0020 Cal ID: HPMS9-21-JUL-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Acetone	5.00	10.0	5.00	1	U
Benzene	0.500	5.00	0.500	1	U
Bromobenzene	0.500	5.00	0.500	1	U
Bromochloromethane	0.500	5.00	0.500	1	U
Bromodichloromethane	0.500	5.00	0.500	1	U
Bromoform	0.500	5.00	0.500	1	U
Bromomethane	1.00	10.0	1.00	1	U
2-Butanone	2.50	10.0	2.50	1	U
n-Butylbenzene	0.500	5.00	0.500	1	U
sec-Butylbenzene	0.500	5.00	0.500	1	U
tert-Butylbenzene	0.500	5.00	0.500	1	U
Carbon disulfide	0.500	5.00	0.500	1	U
Carbon tetrachloride	0.500	5.00	0.500	1	U
Chlorobenzene	0.500	5.00	0.500	1	U
Chlorodibromomethane	0.500	5.00	0.500	1	U
Chloroethane	1.00	10.0	1.00	1	U
2-Chloroethyl vinyl ether	2.00	10.0	2.00	1	U
Chloroform	0.500	5.00	0.500	1	U
Chloromethane	2.00	10.0	2.00	1	U
2-Chlorotoluene	0.500	5.00	0.500	1	U
4-Chlorotoluene	0.500	5.00	0.500	1	U
1,2-Dibromo-3-chloropropane	2.00	5.00	2.00	1	U
1,2-Dibromoethane	0.500	5.00	0.500	1	U
Dibromomethane	0.500	5.00	0.500	1	U
1,2-Dichlorobenzene	0.500	5.00	0.500	1	U
1,3-Dichlorobenzene	0.500	5.00	0.500	1	U
1,4-Dichlorobenzene	0.500	5.00	0.500	1	U
Dichlorodifluoromethane	1.00	10.0	1.00	1	U
1,1-Dichloroethane	1.00	5.00	1.00	1	U
1,2-Dichloroethane	0.500	5.00	0.500	1	U
1,1-Dichloroethene	0.500	5.00	0.500	1	U
cis-1,2-Dichloroethene	0.500	5.00	0.500	1	U
trans-1,2-Dichloroethene	0.500	5.00	0.500	1	U
1,2-Dichloropropane	0.500	5.00	0.500	1	U
1,3-Dichloropropane	0.500	5.00	0.500	1	U
2,2-Dichloropropane	0.500	5.00	0.500	1	U
cis-1,3-Dichloropropene	0.500	5.00	0.500	1	U
trans-1,3-Dichloropropene	0.500	5.00	0.500	1	U
1,1-Dichloropropene	0.500	5.00	0.500	1	U
Ethylbenzene	0.500	5.00	0.500	1	U
2-Hexanone	2.50	10.0	2.50	1	U
Hexachlorobutadiene	0.500	5.00	0.500	1	U

Report Name:BLANK
PDF ID: 1461064
07-AUG-2009 12:54

Microbac Laboratories Inc.

METHOD BLANK REPORT

00082570

Login Number:L09080106 Prep Date:08/06/09 11:52 Sample ID:WG309105-01
Instrument ID:HPMS9 Run Date:08/06/09 11:52 Prep Method:5030C/5035A
File ID:9M71255 Analyst:TMB Method:8260B
Workgroup (AAB#):WG309105 Matrix:Soil Units:ug/kg
Contract #:DACA56-94-D-0020 Cal ID: HPMS9-21-JUL-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Isopropylbenzene	0.500	5.00	0.500	1	U
p-Isopropyltoluene	0.500	5.00	0.500	1	U
4-Methyl-2-pentanone	2.50	10.0	2.50	1	U
Methylene chloride	1.00	5.00	1.00	1	U
Naphthalene	0.500	10.0	0.500	1	U
n-Propylbenzene	0.500	5.00	0.500	1	U
Styrene	0.500	5.00	0.500	1	U
1,1,1,2-Tetrachloroethane	0.500	5.00	0.500	1	U
1,1,2,2-Tetrachloroethane	0.500	5.00	0.500	1	U
Tetrachloroethene	0.500	5.00	0.500	1	U
Toluene	0.500	5.00	0.500	1	U
1,2,3-Trichlorobenzene	0.500	5.00	0.500	1	U
1,2,4-Trichlorobenzene	0.500	5.00	0.500	1	U
1,1,1-Trichloroethane	0.500	5.00	0.500	1	U
1,1,2-Trichloroethane	0.500	5.00	0.500	1	U
Trichloroethene	0.500	5.00	0.500	1	U
Trichlorofluoromethane	1.00	10.0	1.00	1	U
1,2,3-Trichloropropane	1.00	5.00	1.00	1	U
1,2,4-Trimethylbenzene	0.500	5.00	0.500	1	U
1,3,5-Trimethylbenzene	0.500	5.00	0.500	1	U
Vinyl acetate	1.00	10.0	1.00	1	U
Vinyl chloride	1.00	10.0	1.00	1	U
o-Xylene	0.500	5.00	0.500	1	U
m-,p-Xylene	0.500	5.00	0.500	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	102	80 - 120	PASS
1,2-Dichloroethane-d4	99.7	80 - 120	PASS
Toluene-d8	104	81 - 117	PASS
4-Bromofluorobenzene	104	74 - 121	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1461064
07-AUG-2009 12:54

Login Number: L09080106 Analyst: TMB Prep Method: 5030C/5035A
Instrument ID: HPMS9 Matrix: Soil Method: 8260B
Workgroup (AAB#): WG309105 Units: ug/kg
QC Key: STD Lot #:

Sample ID: WG309105-02 LCS File ID: 9M71256 Run Date: 08/06/2009 12:22
Sample ID: WG309105-03 LCS2 File ID: 9M71257 Run Date: 08/06/2009 12:52

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Acetone	20.0	20.4	102	20.0	22.6	113	10.0	20 - 160	30	
Benzene	20.0	21.8	109	20.0	21.4	107	1.77	70 - 130	30	
Bromobenzene	20.0	20.7	103	20.0	19.9	99.7	3.74	72 - 131	30	
Bromochloromethane	20.0	20.2	101	20.0	20.8	104	2.70	70 - 130	30	
Bromodichloromethane	20.0	21.1	105	20.0	20.8	104	1.19	72 - 137	30	
Bromoform	20.0	18.7	93.4	20.0	18.4	92.0	1.48	49 - 136	30	
Bromomethane	20.0	20.5	103	20.0	20.9	105	1.71	37 - 143	30	
2-Butanone	20.0	20.3	101	20.0	22.9	114	12.0	37 - 180	30	
n-Butylbenzene	20.0	19.4	97.2	20.0	19.1	95.5	1.72	70 - 136	30	
sec-Butylbenzene	20.0	21.0	105	20.0	20.8	104	0.627	71 - 132	30	
tert-Butylbenzene	20.0	20.9	104	20.0	20.4	102	2.28	72 - 130	30	
Carbon disulfide	20.0	18.3	91.7	20.0	17.9	89.6	2.39	39 - 139	30	
Carbon tetrachloride	20.0	21.0	105	20.0	20.4	102	3.13	59 - 136	30	
Chlorobenzene	20.0	19.5	97.7	20.0	19.5	97.7	0.0204	70 - 130	30	
Chlorodibromomethane	20.0	19.1	95.3	20.0	19.8	98.8	3.55	59 - 136	30	
Chloroethane	20.0	22.5	113	20.0	22.3	112	0.886	52 - 135	30	
2-Chloroethyl vinyl ether	20.0	18.2	90.9	20.0	19.8	98.9	8.41	35 - 154	30	
Chloroform	20.0	21.0	105	20.0	20.7	104	1.19	74 - 129	30	
Chloromethane	20.0	22.4	112	20.0	22.4	112	0.248	30 - 131	30	
2-Chlorotoluene	20.0	21.3	107	20.0	20.7	104	2.83	63 - 147	30	
4-Chlorotoluene	20.0	20.1	101	20.0	19.7	98.6	2.09	70 - 138	30	
1,2-Dibromo-3-chloropropane	20.0	17.8	88.8	20.0	18.6	92.9	4.47	40 - 135	30	
1,2-Dibromoethane	20.0	18.7	93.4	20.0	19.7	98.5	5.32	69 - 130	30	
Dibromomethane	20.0	21.3	107	20.0	21.3	107	0.0674	69 - 130	30	
1,2-Dichlorobenzene	20.0	20.2	101	20.0	20.0	99.9	1.13	70 - 130	30	
1,3-Dichlorobenzene	20.0	19.6	98.2	20.0	19.5	97.5	0.675	70 - 130	30	
1,4-Dichlorobenzene	20.0	18.9	94.3	20.0	18.8	93.9	0.438	70 - 130	30	
Dichlorodifluoromethane	20.0	34.1	171	20.0	33.9	169	0.797	25 - 130	30	*
1,1-Dichloroethane	20.0	20.6	103	20.0	20.2	101	1.98	75 - 125	30	
1,2-Dichloroethane	20.0	20.2	101	20.0	20.1	101	0.302	63 - 133	30	
1,1-Dichloroethene	20.0	20.1	101	20.0	19.7	98.7	1.99	65 - 135	30	
cis-1,2-Dichloroethene	20.0	21.2	106	20.0	21.0	105	0.944	70 - 130	30	
trans-1,2-Dichloroethene	20.0	22.1	111	20.0	22.3	112	0.779	72 - 127	30	
1,2-Dichloropropane	20.0	20.8	104	20.0	20.9	105	0.429	72 - 130	30	
1,3-Dichloropropane	20.0	19.3	96.5	20.0	20.2	101	4.67	65 - 128	30	
2,2-Dichloropropane	20.0	19.8	99.0	20.0	19.2	96.1	2.88	66 - 135	30	
cis-1,3-Dichloropropene	20.0	20.4	102	20.0	20.8	104	1.57	70 - 142	30	
trans-1,3-Dichloropropene	20.0	17.1	85.4	20.0	17.7	88.3	3.31	65 - 139	30	
1,1-Dichloropropene	20.0	20.6	103	20.0	20.5	103	0.494	57 - 138	30	
Ethylbenzene	20.0	19.5	97.7	20.0	19.8	98.9	1.23	70 - 130	30	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1461033
Report generated: 08/07/2009 12:54

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00082572

Login Number: L09080106 Analyst: TMB Prep Method: 5030C/5035A
Instrument ID: HPMS9 Matrix: Soil Method: 8260B
Workgroup (AAB#): WG309105 Units: ug/kg
QC Key: STD Lot #:

Sample ID: WG309105-02 LCS File ID: 9M71256 Run Date: 08/06/2009 12:22
Sample ID: WG309105-03 LCS2 File ID: 9M71257 Run Date: 08/06/2009 12:52

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
2-Hexanone	20.0	18.3	91.5	20.0	21.1	105	14.0	45 - 145	30	
Hexachlorobutadiene	20.0	19.2	96.2	20.0	18.5	92.6	3.86	65 - 135	30	
Isopropylbenzene	20.0	16.8	84.0	20.0	16.7	83.7	0.303	68 - 129	30	
p-Isopropyltoluene	20.0	18.7	93.6	20.0	18.3	91.6	2.12	72 - 128	30	
4-Methyl-2-pentanone	20.0	18.7	93.7	20.0	21.9	109	15.4	47 - 146	30	
Methylene chloride	20.0	20.3	102	20.0	20.1	100	1.23	74 - 128	30	
Naphthalene	20.0	18.3	91.3	20.0	19.8	99.2	8.21	50 - 146	30	
n-Propylbenzene	20.0	21.2	106	20.0	20.8	104	1.98	72 - 136	30	
Styrene	20.0	18.6	92.9	20.0	18.7	93.3	0.409	74 - 130	30	
1,1,1,2-Tetrachloroethane	20.0	19.9	99.5	20.0	19.4	97.0	2.45	71 - 137	30	
1,1,2,2-Tetrachloroethane	20.0	19.0	95.1	20.0	20.3	101	6.37	55 - 130	30	
Tetrachloroethene	20.0	20.4	102	20.0	20.0	99.8	2.44	72 - 130	30	
Toluene	20.0	21.6	108	20.0	21.8	109	0.724	77 - 126	30	
1,2,3-Trichlorobenzene	20.0	18.9	94.3	20.0	19.4	97.0	2.73	60 - 135	30	
1,2,4-Trichlorobenzene	20.0	18.1	90.3	20.0	17.7	88.6	1.94	65 - 130	30	
1,1,1-Trichloroethane	20.0	20.5	103	20.0	20.4	102	0.451	70 - 135	30	
1,1,2-Trichloroethane	20.0	19.5	97.3	20.0	20.3	101	4.18	60 - 125	30	
Trichloroethene	20.0	20.7	104	20.0	20.7	103	0.285	72 - 126	30	
Trichlorofluoromethane	20.0	20.6	103	20.0	20.5	102	0.863	48 - 154	30	
1,2,3-Trichloropropane	20.0	19.3	96.4	20.0	20.9	104	7.87	65 - 130	30	
1,2,4-Trimethylbenzene	20.0	21.2	106	20.0	20.8	104	2.13	75 - 132	30	
1,3,5-Trimethylbenzene	20.0	19.6	98.0	20.0	19.5	97.6	0.405	74 - 133	30	
Vinyl acetate	20.0	15.6	78.1	20.0	16.9	84.6	8.02	10 - 150	30	
Vinyl chloride	20.0	22.7	114	20.0	23.0	115	1.05	45 - 140	30	
o-Xylene	20.0	19.1	95.6	20.0	19.2	96.1	0.519	70 - 130	30	
m-,p-Xylene	40.0	38.4	95.9	40.0	38.2	95.4	0.514	70 - 130	30	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	102	102	80 - 120	PASS
Dibromofluoromethane	103	102	80 - 120	PASS
4-Bromofluorobenzene	104	104	74 - 121	PASS
Toluene-d8	105	105	81 - 117	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1461033
Report generated: 08/07/2009 12:54

BFB

Login Number: L09080106
Instrument: HPMS9
Analyst: TMB
Workgroup: WG307576

Tune ID: WG307576-01
Run Date: 07/21/2009
Run Time: 09:58
File ID: 9M70935
Cal ID: HPMS9-21-JUL-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	20.2	2676	PASS
75.0	95.0	30.0	60.0	51.1	6786	PASS
95.0	95.0	100	100	100	13268	PASS
96.0	95.0	5.00	9.00	8.28	1099	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	78.4	10396	PASS
175	174	5.00	9.00	7.48	778	PASS
176	174	95.0	101	98.0	10193	PASS
177	176	5.00	9.00	6.00	612	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG307576-02	STD-S	01	07/21/2009 10:24	
WG307576-03	STD-S	01	07/21/2009 10:55	
WG307576-06	STD-S	01	07/21/2009 12:27	
WG307576-07	STD-CCV-S	01	07/21/2009 12:58	
WG307576-08	STD-S	01	07/21/2009 13:29	
WG307576-09	STD-S	01	07/21/2009 14:00	
WG307576-10	STD-S	01	07/21/2009 14:31	
WG307576-04	STD-S	01	07/21/2009 16:33	
WG307576-05	STD-S	01	07/21/2009 17:04	
WG307576-11	SSCV-S	01	07/21/2009 18:37	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1461067
Report generated 08/07/2009 12:54

BFB

Login Number: L09080106
Instrument: HPMS9
Analyst: TMB
Workgroup: WG309103

Tune ID: WG309103-01
Run Date: 08/06/2009
Run Time: 10:18
File ID: 9M71252
Cal ID: HPMS9-21-JUL-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	20.8	6864	PASS
75.0	95.0	30.0	60.0	50.2	16558	PASS
95.0	95.0	100	100	100	32997	PASS
96.0	95.0	5.00	9.00	6.84	2256	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	80.7	26638	PASS
175	174	5.00	9.00	8.56	2280	PASS
176	174	95.0	101	95.9	25550	PASS
177	176	5.00	9.00	6.63	1694	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG309103-02	CCV-S	01	08/06/2009 10:45	
WG309105-01	BLANK	01	08/06/2009 11:52	
WG309105-02	LCS	01	08/06/2009 12:22	
WG309105-03	LCS2	01	08/06/2009 12:52	
L09080106-03	PRCL01	01	08/06/2009 13:52	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1461067
Report generated 08/07/2009 12:54

Login Number: L09080106 **Instrument ID:** HPMS9
Analytical Method: 8260B **Initial Calibration Date:** 21-JUL-09 17:04
ICAL Workgroup: WG307576 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.4879	6.65		
1,2-Dichloropropane	CCC	0.2381	4.54		
Chloroform	CCC	0.5271	4.64		
Ethylbenzene	CCC	0.5329	18.4	1.00000	
Toluene	CCC	1.463	12.0		
Vinyl Chloride	CCC	0.1506	12.1		
1,1,2,2-Tetrachloroethane	SPCC	0.5939	6.47		
1,1-Dichloroethane	SPCC	0.5328	3.09		
Bromoform	SPCC	0.1856	9.99		
Chlorobenzene	SPCC	1.075	3.25		
Chloromethane	SPCC	0.2650	4.29		
1,1,1,2-Tetrachloroethane		0.3640	6.04		
1,1,1-Trichloroethane		0.5090	8.15		
1,1,2-Trichloroethane		0.2546	2.66		
1,1-Dichloropropene		0.4085	11.5		
1,2,3-Trichlorobenzene		0.7563	7.06		
1,2,3-Trichloropropane		0.1992	5.99		
1,2,4-Trichlorobenzene		0.8623	10.4		
1,2,4-Trimethylbenzene		2.972	9.46		
1,2-Dibromo-3-Chloropropane		0.1028	13.4		
1,2-Dibromoethane		0.2606	5.27		
1,2-Dichlorobenzene		1.460	2.55		
1,2-Dichloroethane		0.3707	5.81		
1,3,5-Trimethylbenzene		2.860	15.2		1.00000
1,3-Dichlorobenzene		1.720	3.20		
1,3-Dichloropropane		0.4272	4.55		
1,4-Dichlorobenzene		1.741	5.31		
2,2-Dichloropropane		0.4657	9.73		
2-Butanone		0.07815	5.91		
2-Chloroethyl Vinyl Ether		0.08868	20.4		0.99900
2-Chlorotoluene		2.944	6.23		
2-Hexanone		0.1344	8.51		
4-Chlorotoluene		2.388	5.19		
4-Methyl-2-Pentanone		0.05630	12.1		
Acetone		0.06087	18.7		0.99900
Benzene		1.090	8.37		
Bromobenzene		0.9133	2.45		
Bromochloromethane		0.1336	6.20		
Bromodichloromethane		0.3449	6.62		
Bromomethane		0.1381	11.6		
Carbon Disulfide		0.9563	4.57		
Carbon Tetrachloride		0.4695	8.98		
Chloroethane		0.1404	7.06		
Dibromochloromethane		0.3199	10.3		
Dibromomethane		0.1452	4.19		

INT_CAL - Modified 03/06/2008
PDF File ID: 1461065
Report generated 08/07/2009 12:54

Login Number: L09080106 **Instrument ID:** HPMS9
Analytical Method: 8260B **Initial Calibration Date:** 21-JUL-09 17:04
ICAL Workgroup: WG307576 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
Dichlorodifluoromethane		0.3425	7.56		
Hexachlorobutadiene		0.5219	3.50		
Isopropylbenzene		1.708	15.7		1.00000
Methylene Chloride		0.2936	19.2		1.00000
Naphthalene		1.421	20.1	0.99900	
Styrene		1.019	16.2		1.00000
Tetrachloroethene		0.3612	5.70		
Trichloroethene		0.3216	6.93		
Trichlorofluoromethane		0.6042	6.39		
Vinyl Acetate		0.3953	13.4		
cis-1,2-Dichloroethene		0.3030	5.50		
cis-1,3-Dichloropropene		0.3547	13.3		
m-,p-Xylene		0.6476	16.7		1.00000
n-Butylbenzene		2.645	16.2	1.00000	
n-Propylbenzene		4.054	12.6		
o-Xylene		0.5456	28.0	1.00000	
p-Isopropyltoluene		3.165	16.1	0.99900	
sec-Butylbenzene		3.878	13.3		
tert-Butylbenzene		0.6553	12.0		
trans-1,2-Dichloroethene		0.2977	5.31		
trans-1,3-Dichloropropene		0.4668	11.2		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

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Analyte	WG307576-02			WG307576-03			WG307576-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	NA	NA	NA	2.00	15930.0000	0.4534
1,2-Dichloropropane	NA	NA	NA	NA	NA	NA	2.00	7835.00000	0.2230
Chloroform	NA	NA	NA	NA	NA	NA	2.00	17953.0000	0.5110
Ethylbenzene	0.500	2122.00000	0.3629	1.00	5470.00000	0.4580	2.00	13072.0000	0.5007
Toluene	0.500	7051.00000	1.206	1.00	14562.0000	1.219	2.00	36863.0000	1.412
Vinyl Chloride	NA	NA	NA	NA	NA	NA	2.00	5676.00000	0.1616
1,1,2,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	2.00	7511.00000	0.6340
1,1-Dichloroethane	NA	NA	NA	NA	NA	NA	2.00	18400.0000	0.5237
Bromoform	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chlorobenzene	NA	NA	NA	NA	NA	NA	2.00	28857.0000	1.105
Chloromethane	NA	NA	NA	NA	NA	NA	2.00	9428.00000	0.2684
1,1,1,2-Tetrachloroethane	NA	NA	NA	NA	NA	NA	2.00	8807.00000	0.3373
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	NA	2.00	16403.0000	0.4669
1,1,2-Trichloroethane	NA	NA	NA	NA	NA	NA	2.00	6622.00000	0.2536
1,1-Dichloropropene	NA	NA	NA	NA	NA	NA	2.00	11725.0000	0.3337
1,2,3-Trichlorobenzene	NA	NA	NA	NA	NA	NA	2.00	8182.00000	0.6906
1,2,3-Trichloropropane	NA	NA	NA	NA	NA	NA	2.00	2435.00000	0.2055
1,2,4-Trichlorobenzene	NA	NA	NA	NA	NA	NA	2.00	9218.00000	0.7781
1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	NA	2.00	29471.0000	2.488
1,2-Dibromo-3-Chloropropane	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	NA	NA	NA	NA	NA	NA	2.00	6638.00000	0.2542
1,2-Dichlorobenzene	NA	NA	NA	NA	NA	NA	2.00	17402.0000	1.469
1,2-Dichloroethane	NA	NA	NA	NA	NA	NA	2.00	13284.0000	0.3781
1,3,5-Trimethylbenzene	NA	NA	NA	NA	NA	NA	2.00	25033.0000	2.113
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	2.00	20915.0000	1.765
1,3-Dichloropropane	NA	NA	NA	NA	NA	NA	2.00	10704.0000	0.4100
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	2.00	22284.0000	1.881
2,2-Dichloropropane	NA	NA	NA	NA	NA	NA	2.00	14646.0000	0.4169
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chloroethyl Vinyl Ether	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorotoluene	NA	NA	NA	NA	NA	NA	2.00	31213.0000	2.635
2-Hexanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorotoluene	NA	NA	NA	NA	NA	NA	2.00	26458.0000	2.233
4-Methyl-2-Pentanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	0.500	7079.00000	0.8804	1.00	17539.0000	1.073	2.00	39872.0000	1.135
Bromobenzene	NA	NA	NA	NA	NA	NA	2.00	10665.0000	0.9002
Bromochloromethane	NA	NA	NA	NA	NA	NA	2.00	4163.00000	0.1185
Bromodichloromethane	NA	NA	NA	NA	NA	NA	2.00	10963.0000	0.3120
Bromomethane	NA	NA	NA	NA	NA	NA	2.00	4106.00000	0.1169
Carbon Disulfide	NA	NA	NA	NA	NA	NA	2.00	33013.0000	0.9397
Carbon Tetrachloride	NA	NA	NA	NA	NA	NA	2.00	14481.0000	0.4122

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Analyte	WG307576-05			WG307576-06			WG307576-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	5.00	38920.0000	0.4406	20.0	169232.000	0.5078	50.0	447858.000	0.5153
1,2-Dichloropropane	5.00	20014.0000	0.2266	20.0	80191.0000	0.2406	50.0	217010.000	0.2497
Chloroform	5.00	43670.0000	0.4944	20.0	185407.000	0.5564	50.0	479416.000	0.5516
Ethylbenzene	5.00	36464.0000	0.5567	20.0	150705.000	0.6095	50.0	408583.000	0.6281
Toluene	5.00	94304.0000	1.440	20.0	399876.000	1.617	50.0	1061783.00	1.632
Vinyl Chloride	5.00	14359.0000	0.1625	20.0	55531.0000	0.1666	50.0	133665.000	0.1538
1,1,2,2-Tetrachloroethane	5.00	18194.0000	0.6001	20.0	71161.0000	0.6172	50.0	189616.000	0.6094
1,1-Dichloroethane	5.00	45390.0000	0.5138	20.0	184821.000	0.5546	50.0	476449.000	0.5481
Bromoform	5.00	10251.0000	0.1565	20.0	46790.0000	0.1892	50.0	131538.000	0.2022
Chlorobenzene	5.00	69816.0000	1.066	20.0	273020.000	1.104	50.0	713457.000	1.097
Chloromethane	5.00	22776.0000	0.2578	20.0	93066.0000	0.2793	50.0	238382.000	0.2743
1,1,1,2-Tetrachloroethane	5.00	22133.0000	0.3379	20.0	94060.0000	0.3804	50.0	250618.000	0.3853
1,1,1-Trichloroethane	5.00	39948.0000	0.4522	20.0	185095.000	0.5554	50.0	471603.000	0.5426
1,1,2-Trichloroethane	5.00	16244.0000	0.2480	20.0	63749.0000	0.2578	50.0	170705.000	0.2624
1,1-Dichloropropene	5.00	32352.0000	0.3662	20.0	146247.000	0.4389	50.0	385229.000	0.4432
1,2,3-Trichlorobenzene	5.00	21826.0000	0.7198	20.0	82933.0000	0.7193	50.0	243089.000	0.7813
1,2,3-Trichloropropane	5.00	5929.00000	0.1955	20.0	23951.0000	0.2077	50.0	65793.0000	0.2115
1,2,4-Trichlorobenzene	5.00	23573.0000	0.7775	20.0	91641.0000	0.7948	50.0	280780.000	0.9024
1,2,4-Trimethylbenzene	5.00	84474.0000	2.786	20.0	368534.000	3.196	50.0	970527.000	3.119
1,2-Dibromo-3-Chloropropane	5.00	2427.00000	0.08000	20.0	11464.0000	0.09940	50.0	34895.0000	0.1122
1,2-Dibromoethane	5.00	15496.0000	0.2366	20.0	65176.0000	0.2636	50.0	176177.000	0.2708
1,2-Dichlorobenzene	5.00	43283.0000	1.428	20.0	172285.000	1.494	50.0	465972.000	1.498
1,2-Dichloroethane	5.00	31856.0000	0.3606	20.0	131989.000	0.3961	50.0	336384.000	0.3870
1,3,5-Trimethylbenzene	5.00	77368.0000	2.552	20.0	363140.000	3.150	50.0	967267.000	3.109
1,3-Dichlorobenzene	5.00	50630.0000	1.670	20.0	205514.000	1.783	50.0	539110.000	1.733
1,3-Dichloropropane	5.00	26119.0000	0.3987	20.0	107642.000	0.4354	50.0	290501.000	0.4466
1,4-Dichlorobenzene	5.00	53906.0000	1.778	20.0	204392.000	1.773	50.0	534139.000	1.717
2,2-Dichloropropane	5.00	35260.0000	0.3992	20.0	161920.000	0.4859	50.0	433752.000	0.4990
2-Butanone	5.00	7433.00000	0.08410	20.0	25573.0000	0.07670	50.0	69214.0000	0.07960
2-Chloroethyl Vinyl Ether	5.00	5474.00000	0.06200	20.0	23372.0000	0.07010	50.0	81830.0000	0.09410
2-Chlorotoluene	5.00	88943.0000	2.933	20.0	365071.000	3.166	50.0	950121.000	3.054
2-Hexanone	5.00	7733.00000	0.1181	20.0	31418.0000	0.1271	50.0	94012.0000	0.1445
4-Chlorotoluene	5.00	68136.0000	2.247	20.0	288492.000	2.502	50.0	769573.000	2.473
4-Methyl-2-Pentanone	5.00	4087.00000	0.04630	20.0	16914.0000	0.05080	50.0	53653.0000	0.06170
Acetone	5.00	7275.00000	0.08240	20.0	20885.0000	0.06270	50.0	51518.0000	0.05930
Benzene	5.00	97337.0000	1.102	20.0	386358.000	1.159	50.0	1012312.00	1.165
Bromobenzene	5.00	27462.0000	0.9057	20.0	108866.000	0.9442	50.0	288930.000	0.9286
Bromochloromethane	5.00	11905.0000	0.1348	20.0	45814.0000	0.1375	50.0	123404.000	0.1420
Bromodichloromethane	5.00	28387.0000	0.3213	20.0	119263.000	0.3579	50.0	319558.000	0.3676
Bromomethane	5.00	10438.0000	0.1182	20.0	49140.0000	0.1475	50.0	131250.000	0.1510
Carbon Disulfide	5.00	77880.0000	0.8816	20.0	324189.000	0.9728	50.0	873544.000	1.005
Carbon Tetrachloride	5.00	37322.0000	0.4225	20.0	171634.000	0.5150	50.0	430955.000	0.4958

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Analyte	WG307576-08			WG307576-09			WG307576-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	100	955181.000	0.5122	200	1850439.00	0.4980	NA	NA	NA
1,2-Dichloropropane	100	459400.000	0.2463	200	899718.000	0.2421	NA	NA	NA
Chloroform	100	996532.000	0.5343	200	1912711.00	0.5147	NA	NA	NA
Ethylbenzene	100	846142.000	0.6147	NA	NA	NA	NA	NA	NA
Toluene	100	2218478.00	1.612	200	4172496.00	1.568	NA	NA	NA
Vinyl Chloride	100	261522.000	0.1402	200	441433.000	0.1188	NA	NA	NA
1,1,2,2-Tetrachloroethane	100	370514.000	0.5769	200	642306.000	0.5257	NA	NA	NA
1,1-Dichloroethane	100	1001882.00	0.5372	200	1929767.00	0.5193	NA	NA	NA
Bromoform	100	275245.000	0.1999	200	478863.000	0.1800	NA	NA	NA
Chlorobenzene	100	1465433.00	1.065	200	2699613.00	1.015	NA	NA	NA
Chloromethane	100	488375.000	0.2619	200	922112.000	0.2481	NA	NA	NA
1,1,1,2-Tetrachloroethane	100	524772.000	0.3812	200	963399.000	0.3621	NA	NA	NA
1,1,1-Trichloroethane	100	982209.000	0.5267	200	1895064.00	0.5100	NA	NA	NA
1,1,2-Trichloroethane	100	357878.000	0.2600	200	653207.000	0.2455	NA	NA	NA
1,1-Dichloropropene	100	823651.000	0.4416	200	1587542.00	0.4272	NA	NA	NA
1,2,3-Trichlorobenzene	100	526743.000	0.8202	200	985635.000	0.8067	NA	NA	NA
1,2,3-Trichloropropane	100	126026.000	0.1962	200	218181.000	0.1786	NA	NA	NA
1,2,4-Trichlorobenzene	100	622270.000	0.9689	200	1163338.00	0.9521	NA	NA	NA
1,2,4-Trimethylbenzene	100	2049348.00	3.191	200	3726555.00	3.050	NA	NA	NA
1,2-Dibromo-3-Chloropropane	100	72256.0000	0.1125	200	134153.000	0.1098	NA	NA	NA
1,2-Dibromoethane	100	378213.000	0.2747	200	701933.000	0.2638	NA	NA	NA
1,2-Dichlorobenzene	100	942598.000	1.468	200	1715654.00	1.404	NA	NA	NA
1,2-Dichloroethane	100	684462.000	0.3670	200	1246662.00	0.3355	NA	NA	NA
1,3,5-Trimethylbenzene	100	2044778.00	3.184	200	3727444.00	3.051	NA	NA	NA
1,3-Dichlorobenzene	100	1108982.00	1.727	200	2003690.00	1.640	NA	NA	NA
1,3-Dichloropropane	100	613243.000	0.4455	200	1135426.00	0.4267	NA	NA	NA
1,4-Dichlorobenzene	100	1087098.00	1.693	200	1964192.00	1.608	NA	NA	NA
2,2-Dichloropropane	100	933391.000	0.5005	200	1830694.00	0.4926	NA	NA	NA
2-Butanone	100	150156.000	0.08050	200	261410.000	0.07030	300	446185.000	0.07770
2-Chloroethyl Vinyl Ether	100	192125.000	0.1030	200	368791.000	0.09920	300	595325.000	0.1037
2-Chlorotoluene	100	1933005.00	3.010	200	3498145.00	2.863	NA	NA	NA
2-Hexanone	100	201886.000	0.1467	200	342674.000	0.1288	300	571366.000	0.1414
4-Chlorotoluene	100	1605775.00	2.500	200	2899090.00	2.373	NA	NA	NA
4-Methyl-2-Pentanone	100	118248.000	0.06340	200	204690.000	0.05510	300	347278.000	0.06050
Acetone	100	106412.000	0.05710	200	192507.000	0.05180	300	298130.000	0.05190
Benzene	100	2100507.00	1.126	200	4007096.00	1.078	NA	NA	NA
Bromobenzene	100	590759.000	0.9199	200	1076506.00	0.8811	NA	NA	NA
Bromochloromethane	100	257501.000	0.1381	200	486108.000	0.1308	NA	NA	NA
Bromodichloromethane	100	673497.000	0.3611	200	1298225.00	0.3494	NA	NA	NA
Bromomethane	100	274854.000	0.1474	200	547644.000	0.1474	NA	NA	NA
Carbon Disulfide	100	1842308.00	0.9878	200	3532407.00	0.9506	NA	NA	NA
Carbon Tetrachloride	100	919312.000	0.4929	200	1777829.00	0.4784	NA	NA	NA

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Analyte	WG307576-02			WG307576-03			WG307576-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	NA	NA	NA	NA	NA	NA	2.00	4358.00000	0.1240
Dibromochloromethane	NA	NA	NA	NA	NA	NA	2.00	7139.00000	0.2734
Dibromomethane	NA	NA	NA	NA	NA	NA	2.00	4958.00000	0.1411
Dichlorodifluoromethane	NA	NA	NA	NA	NA	NA	2.00	10983.0000	0.3126
Hexachlorobutadiene	NA	NA	NA	NA	NA	NA	2.00	5851.00000	0.4939
Isopropylbenzene	NA	NA	NA	NA	NA	NA	2.00	33115.0000	1.268
Methylene Chloride	NA	NA	NA	NA	NA	NA	2.00	14122.0000	0.4020
Naphthalene	NA	NA	NA	NA	NA	NA	2.00	12530.0000	1.058
Styrene	NA	NA	NA	NA	NA	NA	2.00	19582.0000	0.7500
Tetrachloroethene	NA	NA	NA	NA	NA	NA	2.00	8637.00000	0.3308
Trichloroethene	NA	NA	NA	NA	NA	NA	2.00	10449.0000	0.2974
Trichlorofluoromethane	NA	NA	NA	NA	NA	NA	2.00	19507.0000	0.5552
Vinyl Acetate	NA	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	2.00	9749.00000	0.2775
cis-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	2.00	10490.0000	0.2986
m-,p-Xylene	1.00	5418.00000	0.4633	2.00	12231.0000	0.5121	4.00	32716.0000	0.6265
n-Butylbenzene	NA	NA	NA	NA	NA	NA	2.00	22913.0000	1.934
n-Propylbenzene	NA	NA	NA	NA	NA	NA	2.00	38174.0000	3.222
o-Xylene	0.500	1845.00000	0.3155	1.00	4228.00000	0.3540	2.00	12450.0000	0.4769
p-Isopropyltoluene	NA	NA	NA	NA	NA	NA	2.00	26994.0000	2.279
sec-Butylbenzene	NA	NA	NA	NA	NA	NA	2.00	35430.0000	2.991
tert-Butylbenzene	NA	NA	NA	NA	NA	NA	2.00	5973.00000	0.5042
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	2.00	9892.00000	0.2816
trans-1,3-Dichloropropene	NA	NA	NA	NA	NA	NA	2.00	10503.0000	0.4023

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Analyte	WG307576-05			WG307576-06			WG307576-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	5.00	12107.0000	0.1371	20.0	50895.0000	0.1527	50.0	126863.000	0.1460
Dibromochloromethane	5.00	18665.0000	0.2849	20.0	80382.0000	0.3251	50.0	226237.000	0.3478
Dibromomethane	5.00	12116.0000	0.1372	20.0	49586.0000	0.1488	50.0	132352.000	0.1523
Dichlorodifluoromethane	5.00	29381.0000	0.3326	20.0	127729.000	0.3833	50.0	312373.000	0.3594
Hexachlorobutadiene	5.00	15388.0000	0.5075	20.0	61599.0000	0.5343	50.0	161679.000	0.5196
Isopropylbenzene	5.00	97336.0000	1.486	20.0	461108.000	1.865	50.0	1244723.00	1.914
Methylene Chloride	5.00	26968.0000	0.3053	20.0	91449.0000	0.2744	50.0	233480.000	0.2686
Naphthalene	5.00	35114.0000	1.158	20.0	151435.000	1.313	50.0	488641.000	1.571
Styrene	5.00	57954.0000	0.8847	20.0	266787.000	1.079	50.0	756692.000	1.163
Tetrachloroethene	5.00	22330.0000	0.3409	20.0	94544.0000	0.3824	50.0	243392.000	0.3742
Trichloroethene	5.00	25592.0000	0.2897	20.0	110188.000	0.3307	50.0	295172.000	0.3396
Trichlorofluoromethane	5.00	50733.0000	0.5743	20.0	218390.000	0.6553	50.0	554391.000	0.6378
Vinyl Acetate	5.00	27158.0000	0.3074	20.0	124810.000	0.3745	50.0	327706.000	0.3770
cis-1,2-Dichloroethene	5.00	25352.0000	0.2870	20.0	104249.000	0.3128	50.0	276671.000	0.3183
cis-1,3-Dichloropropene	5.00	26143.0000	0.2959	20.0	118172.000	0.3546	50.0	341774.000	0.3932
m-,p-Xylene	10.0	86981.0000	0.6639	40.0	371724.000	0.7517	100	970003.000	0.7456
n-Butylbenzene	5.00	69748.0000	2.300	20.0	332937.000	2.888	50.0	885031.000	2.845
n-Propylbenzene	5.00	110056.000	3.630	20.0	512926.000	4.449	50.0	1351830.00	4.345
o-Xylene	5.00	33969.0000	0.5186	20.0	162441.000	0.6570	50.0	448923.000	0.6902
p-Isopropyltoluene	5.00	85411.0000	2.817	20.0	398275.000	3.454	50.0	1068157.00	3.433
sec-Butylbenzene	5.00	106570.000	3.515	20.0	485067.000	4.207	50.0	1287932.00	4.140
tert-Butylbenzene	5.00	19247.0000	0.6348	20.0	81394.0000	0.7060	50.0	213475.000	0.6861
trans-1,2-Dichloroethene	5.00	24236.0000	0.2744	20.0	103983.000	0.3120	50.0	268148.000	0.3085
trans-1,3-Dichloropropene	5.00	26147.0000	0.3992	20.0	119902.000	0.4849	50.0	332547.000	0.5112

INT_CAL - Modified 03/06/2008
PDF File ID: 1461065
Report generated 08/07/2009 12:54

Login Number: L09080106
Analytical Method: 8260B
Instrument ID: HPMS9
Initial Calibration Date: 21-JUL-09 17:04
Column ID: F

Analyte	WG307576-08			WG307576-09			WG307576-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Chloroethane	100	270495.000	0.1450	200	511416.000	0.1376	NA	NA	NA
Dibromochloromethane	100	484131.000	0.3517	200	895138.000	0.3364	NA	NA	NA
Dibromomethane	100	280202.000	0.1502	200	525159.000	0.1413	NA	NA	NA
Dichlorodifluoromethane	100	643368.000	0.3450	200	1197457.00	0.3222	NA	NA	NA
Hexachlorobutadiene	100	344851.000	0.5370	200	658682.000	0.5391	NA	NA	NA
Isopropylbenzene	100	2628226.00	1.909	200	4797485.00	1.803	NA	NA	NA
Methylene Chloride	100	489285.000	0.2624	200	925816.000	0.2491	NA	NA	NA
Naphthalene	100	1112667.00	1.733	200	2068953.00	1.693	NA	NA	NA
Styrene	100	1580531.00	1.148	200	2897317.00	1.089	NA	NA	NA
Tetrachloroethene	100	513859.000	0.3733	200	973182.000	0.3657	NA	NA	NA
Trichloroethene	100	636273.000	0.3412	200	1230402.00	0.3311	NA	NA	NA
Trichlorofluoromethane	100	1147459.00	0.6153	200	2181829.00	0.5871	NA	NA	NA
Vinyl Acetate	100	835870.000	0.4482	200	1601978.00	0.4311	300	2490804.00	0.4338
cis-1,2-Dichloroethene	100	585764.000	0.3141	200	1145372.00	0.3082	NA	NA	NA
cis-1,3-Dichloropropene	100	747374.000	0.4007	200	1432021.00	0.3854	NA	NA	NA
m-,p-Xylene	200	2008317.00	0.7294	400	3661090.00	0.6880	NA	NA	NA
n-Butylbenzene	100	1926311.00	2.999	200	3548169.00	2.904	NA	NA	NA
n-Propylbenzene	100	2854393.00	4.445	200	5174234.00	4.235	NA	NA	NA
o-Xylene	100	945832.000	0.6871	200	1771225.00	0.6657	NA	NA	NA
p-Isopropyltoluene	100	2296688.00	3.576	200	4190800.00	3.430	NA	NA	NA
sec-Butylbenzene	100	2757358.00	4.294	200	5038873.00	4.124	NA	NA	NA
tert-Butylbenzene	100	455203.000	0.7088	200	845184.000	0.6917	NA	NA	NA
trans-1,2-Dichloroethene	100	574009.000	0.3078	200	1122656.00	0.3021	NA	NA	NA
trans-1,3-Dichloropropene	100	706514.000	0.5132	200	1303268.00	0.4898	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1461065
Report generated 08/07/2009 12:54

Login Number:L09080106 Run Date:07/21/2009 Sample ID:WG307576-11
Instrument ID:HPMS9 Run Time:18:37 Method:8260B
File ID:9M70952 Analyst:TMB QC Key:STD
ICal Workgroup:WG307576 Cal ID: HPMS9 - 21-JUL-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.8	ug/kg	0.547	3.80	30	
1,1-Dichloroethene	CCC	20.0	18.8	ug/kg	0.458	6.00	30	
1,2-Dichloropropane	CCC	20.0	20.2	ug/kg	0.241	1.20	30	
Ethylbenzene	CCC	20.0	20.8	ug/kg	0.636	4.00	30	
Toluene	CCC	20.0	22.0	ug/kg	1.61	10.1	30	
Vinyl Chloride	CCC	20.0	20.2	ug/kg	0.152	1.20	30	
Bromoform	SPCC	20.0	19.6	ug/kg	0.182	2.20	30	
Chlorobenzene	SPCC	20.0	20.5	ug/kg	1.10	2.70	30	
Chloromethane	SPCC	20.0	19.4	ug/kg	0.257	3.10	30	
1,1-Dichloroethane	SPCC	20.0	19.8	ug/kg	0.527	1.20	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	19.8	ug/kg	0.588	1.10	30	
Acetone		20.0	21.5	ug/kg	0.0689	7.70	30	
Benzene		20.0	20.7	ug/kg	1.13	3.70	30	
Bromobenzene		20.0	21.4	ug/kg	0.979	7.20	30	
Bromochloromethane		20.0	19.5	ug/kg	0.131	2.30	30	
Bromodichloromethane		20.0	21.0	ug/kg	0.362	4.80	30	
Bromomethane		20.0	20.1	ug/kg	0.138	0.300	30	
2-Butanone		20.0	20.2	ug/kg	0.0788	0.800	30	
n-Butylbenzene		20.0	20.1	ug/kg	2.88	0.600	30	
sec-Butylbenzene		20.0	22.3	ug/kg	4.32	11.4	30	
tert-Butylbenzene		20.0	22.1	ug/kg	0.725	10.7	30	
Carbon Disulfide		20.0	18.3	ug/kg	0.874	8.60	30	
Carbon Tetrachloride		20.0	20.0	ug/kg	0.470	0.100	30	
Dibromochloromethane		20.0	20.3	ug/kg	0.324	1.40	30	
Chloroethane		20.0	19.9	ug/kg	0.140	0.600	30	
2-Chloroethyl Vinyl Ether		20.0	18.4	ug/kg	0.0772	7.90	30	
2-Chlorotoluene		20.0	22.0	ug/kg	3.24	10.0	30	
4-Chlorotoluene		20.0	21.3	ug/kg	2.54	6.40	30	
1,2-Dibromo-3-Chloropropane		20.0	18.7	ug/kg	0.0963	6.30	30	
1,2-Dibromoethane		20.0	19.6	ug/kg	0.256	1.90	30	
Dibromomethane		20.0	20.8	ug/kg	0.151	4.00	30	
1,2-Dichlorobenzene		20.0	20.9	ug/kg	1.53	4.50	30	
1,3-Dichlorobenzene		20.0	20.7	ug/kg	1.78	3.50	30	
1,4-Dichlorobenzene		20.0	20.0	ug/kg	1.74	0.100	30	
Dichlorodifluoromethane		20.0	27.3	ug/kg	0.467	36.3	30	*
1,2-Dichloroethane		20.0	19.9	ug/kg	0.368	0.600	30	
cis-1,2-Dichloroethene		20.0	19.9	ug/kg	0.302	0.500	30	
trans-1,2-Dichloroethene		20.0	22.2	ug/kg	0.330	10.9	30	
1,3-Dichloropropane		20.0	20.2	ug/kg	0.432	1.10	30	
2,2-Dichloropropane		20.0	18.5	ug/kg	0.432	7.30	30	
cis-1,3-Dichloropropene		20.0	20.2	ug/kg	0.358	0.900	30	
trans-1,3-Dichloropropene		20.0	17.8	ug/kg	0.416	11.0	30	

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1461066
Report generated 08/07/2009 12:54

Login Number: L09080106 Run Date: 07/21/2009 Sample ID: WG307576-11
Instrument ID: HPMS9 Run Time: 18:37 Method: 8260B
File ID: 9M70952 Analyst: TMB QC Key: STD
ICal Workgroup: WG307576 Cal ID: HPMS9 - 21-JUL-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloropropene		20.0	19.9	ug/kg	0.406	0.500	30	
2-Hexanone		20.0	19.0	ug/kg	0.128	4.80	30	
Hexachlorobutadiene		20.0	20.2	ug/kg	0.528	1.10	30	
Isopropylbenzene		20.0	18.1	ug/kg	1.70	9.70	30	
p-Isopropyltoluene		20.0	19.7	ug/kg	3.39	1.70	30	
4-Methyl-2-Pentanone		20.0	17.9	ug/kg	0.0503	10.6	30	
Methylene Chloride		20.0	18.8	ug/kg	0.262	6.10	30	
Naphthalene		20.0	17.8	ug/kg	1.33	10.9	30	
n-Propylbenzene		20.0	22.0	ug/kg	4.47	10.2	30	
Styrene		20.0	19.6	ug/kg	1.11	2.00	30	
1,1,1,2-Tetrachloroethane		20.0	21.1	ug/kg	0.384	5.60	30	
Tetrachloroethene		20.0	20.5	ug/kg	0.369	2.30	30	
1,2,3-Trichlorobenzene		20.0	19.4	ug/kg	0.734	2.90	30	
1,2,4-Trichlorobenzene		20.0	18.3	ug/kg	0.790	8.40	30	
1,1,1-Trichloroethane		20.0	20.3	ug/kg	0.517	1.50	30	
1,1,2-Trichloroethane		20.0	20.4	ug/kg	0.260	2.00	30	
Trichloroethene		20.0	20.5	ug/kg	0.330	2.50	30	
Trichlorofluoromethane		20.0	19.5	ug/kg	0.589	2.60	30	
1,2,3-Trichloropropane		20.0	20.3	ug/kg	0.202	1.40	30	
1,2,4-Trimethylbenzene		20.0	22.0	ug/kg	3.27	10.1	30	
1,3,5-Trimethylbenzene		20.0	20.5	ug/kg	3.20	2.70	30	
Vinyl Acetate		20.0	7.20	ug/kg	0.142	64.0	40	*
o-Xylene		20.0	20.0	ug/kg	0.668	0	30	
m-,p-Xylene		40.0	40.2	ug/kg	0.754	0.400	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082585

Login Number: L09080106 Run Date: 08/06/2009 Sample ID: WG309103-02
Instrument ID: HPMS9 Run Time: 10:45 Method: 8260B
File ID: 9M71253 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG309105 Cal ID: HPMS9 - 21-JUL-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	44.6	ug/kg	0.470	10.8	20	
1,1-Dichloroethene	CCC	50.0	44.9	ug/kg	0.439	10.1	20	
1,2-Dichloropropane	CCC	50.0	46.3	ug/kg	0.221	7.39	20	
Ethylbenzene	CCC	50.0	43.9	ug/kg	0.541	12.1	20	
Toluene	CCC	50.0	48.5	ug/kg	1.42	2.98	20	
Vinyl Chloride	CCC	50.0	43.5	ug/kg	0.131	12.9	20	
Bromoform	SPCC	50.0	48.6	ug/kg	0.180	2.78	40	
Chlorobenzene	SPCC	50.0	43.7	ug/kg	0.941	12.5	40	
Chloromethane	SPCC	50.0	42.8	ug/kg	0.227	14.4	40	
1,1-Dichloroethane	SPCC	50.0	44.1	ug/kg	0.470	11.7	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	47.7	ug/kg	0.567	4.62	40	
Acetone		50.0	44.7	ug/kg	0.0521	10.6	40	
Benzene		50.0	46.6	ug/kg	1.01	6.88	40	
Bromobenzene		50.0	45.1	ug/kg	0.823	9.87	40	
Bromochloromethane		50.0	45.1	ug/kg	0.121	9.80	40	
Bromodichloromethane		50.0	45.7	ug/kg	0.315	8.55	40	
Bromomethane		50.0	44.4	ug/kg	0.123	11.1	40	
2-Butanone		50.0	45.5	ug/kg	0.0712	8.95	40	
n-Butylbenzene		50.0	43.4	ug/kg	2.51	13.3	40	
sec-Butylbenzene		50.0	47.5	ug/kg	3.69	4.95	40	
tert-Butylbenzene		50.0	46.7	ug/kg	0.613	6.52	40	
Carbon Disulfide		50.0	42.3	ug/kg	0.810	15.3	40	
Carbon Tetrachloride		50.0	45.5	ug/kg	0.427	9.01	40	
Dibromochloromethane		50.0	46.8	ug/kg	0.300	6.39	40	
Chloroethane		50.0	44.4	ug/kg	0.125	11.2	40	
2-Chloroethyl Vinyl Ether		50.0	40.6	ug/kg	0.0756	18.7	40	
2-Chlorotoluene		50.0	46.0	ug/kg	2.71	8.09	40	
4-Chlorotoluene		50.0	45.0	ug/kg	2.15	10.0	40	
1,2-Dibromo-3-Chloropropane		50.0	48.1	ug/kg	0.0989	3.76	40	
1,2-Dibromoethane		50.0	45.8	ug/kg	0.239	8.49	40	
Dibromomethane		50.0	46.8	ug/kg	0.136	6.48	40	
1,2-Dichlorobenzene		50.0	45.2	ug/kg	1.32	9.59	40	
1,3-Dichlorobenzene		50.0	44.1	ug/kg	1.52	11.8	40	
1,4-Dichlorobenzene		50.0	43.2	ug/kg	1.51	13.5	40	
Dichlorodifluoromethane		50.0	44.2	ug/kg	0.303	11.7	40	
1,2-Dichloroethane		50.0	44.5	ug/kg	0.330	11.0	40	
cis-1,2-Dichloroethene		50.0	45.9	ug/kg	0.278	8.13	40	
trans-1,2-Dichloroethene		50.0	45.5	ug/kg	0.271	9.08	40	
1,3-Dichloropropane		50.0	46.0	ug/kg	0.393	8.06	40	
2,2-Dichloropropane		50.0	45.8	ug/kg	0.426	8.46	40	
cis-1,3-Dichloropropene		50.0	48.7	ug/kg	0.345	2.64	40	
trans-1,3-Dichloropropene		50.0	47.5	ug/kg	0.444	4.91	40	

CCV - Modified 03/05/2008
PDF File ID: 1461068
Report generated 08/07/2009 12:54

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082586

Login Number: L09080106 Run Date: 08/06/2009 Sample ID: WG309103-02
Instrument ID: HPMS9 Run Time: 10:45 Method: 8260B
File ID: 9M71253 Analyst: TMB QC Key: STD
Workgroup (AAB#): WG309105 Cal ID: HPMS9 - 21-JUL-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,1-Dichloropropene		50.0	46.4	ug/kg	0.379	7.14	40	
2-Hexanone		50.0	49.6	ug/kg	0.133	0.781	40	
Hexachlorobutadiene		50.0	43.0	ug/kg	0.449	13.9	40	
Isopropylbenzene		50.0	43.0	ug/kg	1.66	14.1	40	
p-Isopropyltoluene		50.0	44.1	ug/kg	3.05	11.8	40	
4-Methyl-2-Pentanone		50.0	52.5	ug/kg	0.0591	5.07	40	
Methylene Chloride		50.0	43.4	ug/kg	0.235	13.2	40	
Naphthalene		50.0	44.6	ug/kg	1.45	10.9	40	
n-Propylbenzene		50.0	47.8	ug/kg	3.88	4.39	40	
Styrene		50.0	43.1	ug/kg	1.00	13.8	40	
1,1,1,2-Tetrachloroethane		50.0	46.2	ug/kg	0.336	7.69	40	
Tetrachloroethene		50.0	44.6	ug/kg	0.322	10.8	40	
1,2,3-Trichlorobenzene		50.0	43.5	ug/kg	0.657	13.1	40	
1,2,4-Trichlorobenzene		50.0	44.9	ug/kg	0.775	10.1	40	
1,1,1-Trichloroethane		50.0	45.3	ug/kg	0.462	9.32	40	
1,1,2-Trichloroethane		50.0	45.3	ug/kg	0.231	9.41	40	
Trichloroethene		50.0	46.4	ug/kg	0.298	7.28	40	
Trichlorofluoromethane		50.0	45.0	ug/kg	0.544	10.0	40	
1,2,3-Trichloropropane		50.0	47.3	ug/kg	0.188	5.49	40	
1,2,4-Trimethylbenzene		50.0	46.8	ug/kg	2.78	6.48	40	
1,3,5-Trimethylbenzene		50.0	43.7	ug/kg	2.78	12.5	40	
Vinyl Acetate		50.0	47.1	ug/kg	0.372	5.88	40	
o-Xylene		50.0	44.3	ug/kg	0.593	11.4	40	
m-,p-Xylene		100	85.1	ug/kg	0.638	14.9	40	
1,2-Dichloroethene		100	91.4	ug/kg	0.275	8.61	40	
Xylenes		150	129	ug/kg	0.616	13.7	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1461068
Report generated 08/07/2009 12:54

Microbac

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00082587

Login Number: L09080106
Instrument ID: HPMS9
Workgroup (AAB#): WG309105

CCV Number: WG309103-02
CAL ID: HPMS9-21-JUL-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG309103-02	NA	NA	313750	677324	905204
Upper Limit	NA	NA	627500	1354648	1810408
Lower Limit	NA	NA	156875	338662	452602
L09080106-03	1.00	01	265139	593833	788655
WG309105-01	1.00	01	267724	599307	795469
WG309105-02	1.00	01	265464	587283	763003
WG309105-03	1.00	01	271061	588210	769206

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1461069
Report generated 08/07/2009 12:54

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

Login Number: L09080106
Instrument ID: HPMS9
Workgroup (AAB#): WG309105

CCV Number: WG309103-02
CAL ID: HPMS9-21-JUL-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG309103-02	NA	NA	15.08	12.11	8.27
Upper Limit	NA	NA	15.58	12.61	8.77
Lower Limit	NA	NA	14.58	11.61	7.77
L09080106-03	1.00	01	15.08	12.11	8.27
WG309105-01	1.00	01	15.08	12.12	8.27
WG309105-02	1.00	01	15.08	12.12	8.27
WG309105-03	1.00	01	15.08	12.12	8.27

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1461071
Report generated 08/07/2009 12:54

2.2 Semivolatiles Data

2.2.1 Semivolatiles GC/MS Data (8270)

2.2.1.1 Summary Data

LABORATORY REPORT

00082592

L09080106

08/11/09 16:16

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRCL01	L09080106-03	8270C	1	06-AUG-09

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082593

Sample Number: **L09080106-03**
Client ID: **PRCL01**
Matrix: **Soil**
Workgroup Number: **WG309160**
Collect Date: **08/05/2009 13:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3545**
Analytical Method: **8270C**
Analyst: **CAA**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS5**
Prep Date: **08/06/2009 08:10**
Cal Date: **05/26/2009 13:38**
Run Date: **08/06/2009 18:05**
File ID: **5M55553**
Percent Solid: **81.8**

Analyte	CAS. Number	Result	Qual	PQL	SDL
1,2,4-Trichlorobenzene	120-82-1		U	224	112
1,2-Dichlorobenzene	95-50-1		U	224	112
1,3-Dichlorobenzene	541-73-1		U	224	112
1,4-Dichlorobenzene	106-46-7		U	224	112
2,4,5-Trichlorophenol	95-95-4		U	224	112
2,4,6-Trichlorophenol	88-06-2		U	224	112
2,4-Dichlorophenol	120-83-2		U	224	112
2,4-Dimethylphenol	105-67-9		U	224	112
2,4-Dinitrophenol	51-28-5		U	1120	447
2,4-Dinitrotoluene	121-14-2		U	224	112
2,6-Dinitrotoluene	606-20-2		U	224	112
2-Chloronaphthalene	91-58-7		U	224	112
2-Chlorophenol	95-57-8		U	224	112
2-Methylnaphthalene	91-57-6		U	224	112
2-Methylphenol	95-48-7		U	224	112
2-Nitroaniline	88-74-4		U	1120	447
2-Nitrophenol	88-75-5		U	224	112
3,3'-Dichlorobenzidine	91-94-1		U	447	224
3-,4-Methylphenol	106-44-5		U	224	112
3-Nitroaniline	99-09-2		U	1120	447
4,6-Dinitro-2-methylphenol	534-52-1		U	1120	447
4-Bromophenyl-phenylether	101-55-3		U	224	112
4-Chloro-3-methylphenol	59-50-7		U	224	112
4-Chloroaniline	106-47-8		U	224	112
4-Chlorophenyl-phenyl ether	7005-72-3		U	224	112
4-Nitroaniline	100-01-6		U	1120	447
4-Nitrophenol	100-02-7		U	1120	447
Acenaphthene	83-32-9		U	224	112
Acenaphthylene	208-96-8		U	224	112
Anthracene	120-12-7		U	224	112
Benzo(a)anthracene	56-55-3		U	224	112
Benzo(a)pyrene	50-32-8		U	224	112
Benzo(b)fluoranthene	205-99-2		U	224	112
Benzo(g,h,i)Perylene	191-24-2		U	224	112
Benzo(k)fluoranthene	207-08-9		U	224	112
Benzoic acid	65-85-0		U	6780	447
Benzyl alcohol	100-51-6		U	224	112
Bis(2-Chloroethoxy)Methane	111-91-1		U	224	112
Bis(2-Chloroethyl)ether	111-44-4		U	224	112
bis(2-Chloroisopropyl)ether	108-60-1		U	224	112
bis(2-Ethylhexyl)phthalate	117-81-7		U	224	112
Butylbenzylphthalate	85-68-7		U	224	112
Chrysene	218-01-9		U	224	112
Di-N-Butylphthalate	84-74-2		U	224	112
Di-n-octylphthalate	117-84-0		U	224	112
Dibenzo(a,h)Anthracene	53-70-3		U	224	112
Dibenzofuran	132-64-9		U	224	112
Diethylphthalate	84-66-2		U	224	112
Dimethylphthalate	131-11-3		U	224	112
Fluoranthene	206-44-0		U	224	112
Fluorene	86-73-7		U	224	112
Hexachlorobenzene	118-74-1		U	224	112
Hexachlorobutadiene	87-68-3		U	224	112
Hexachlorocyclopentadiene	77-47-4		U	224	112
Hexachloroethane	67-72-1		U	224	112
Indeno(1,2,3-cd)pyrene	193-39-5		U	224	112
Isophorone	78-59-1		U	224	112
N-Nitrosodiphenylamine	86-30-6		U	224	112
N-Nitrosodipropylamine	621-64-7		U	224	112

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082594

Sample Number: **L09080106-03**
Client ID: **PRCL01**
Matrix: **Soil**
Workgroup Number: **WG309160**
Collect Date: **08/05/2009 13:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3545**
Analytical Method: **8270C**
Analyst: **CAA**
Dilution: **1**
Units: **ug/kg**

Instrument: **HPMS5**
Prep Date: **08/06/2009 08:10**
Cal Date: **05/26/2009 13:38**
Run Date: **08/06/2009 18:05**
File ID: **5M55553**
Percent Solid: **81.8**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Naphthalene	91-20-3		U	224	112
Nitrobenzene	98-95-3		U	224	112
Pentachlorophenol	87-86-5		U	1120	447
Phenanthrene	85-01-8		U	224	112
Phenol	108-95-2		U	224	112
Pyrene	129-00-0		U	224	112

Surrogate	% Recovery	Lower	Upper	Qual
2,4,6-Tribromophenol	91.0	19	122	
2-Fluorobiphenyl	70.5	30	115	
2-Fluorophenol	67.8	25	121	
Nitrobenzene-d5	71.0	23	120	
p-Terphenyl-d14	84.0	18	137	
Phenol-d5	64.2	24	113	

U Not detected at or above adjusted sample detection limit

2.2.1.2 QC Summary Data

Example 8270 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	1261197
Cis = Concentration of the specific internal standard (ug/mL)	40
Ais = Area of the characteristic ion of the specific internal standard	608044
Cx = Concentration of the compound in the standard being measured (ug/mL)	50
RF = Calculated Response Factor	**1.65935**

2.0 Calculating the concentration (C) of a compound in water using the data from the prep log and quantitation report: *

Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Vi)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Vi = Initial volume of sample extracted from prep log (mL)	1021
Cx = Concentration of the compound in the sample being measured (ug/mL)	0.016947
Cx = Concentration of the compound in the sample being measured (ug/L)	**16.947**

3.0 Calculating the concentration (C) of a compound in soil using the data from the prep log and quantitation report: *

Cx = [(Ax) (Cis) (Vf) (D)] / [(Ais) (RF) (Wi)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured	367250
Cis = Concentration of the specific internal standard (ug/mL)	40
Vf = Final volume of sample extract from prep log (mL)	1
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	511641
RF = Average RF from the ICAL	1.65935
Wi = Initial weight of sample extracted (g) from prep log	30
Cx = Concentration of the compound in the sample being measured (ug/g)	0.576763
Cx = Concentration of the compound in the sample being measured (ug/kg)	**576.7627**

Dry weight correction:

Percent solids (PCT_S)	50
Cd = (Cx) (100)/PCT_S	**1153.525** ug/kg

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve plot

b = intercept from curve plot

Step 2: Calculate y from Quantitation Report

y = 16790/784838 = 0.02139

Step 3: Solve for x

x = (y - b)/m = [(0.02139 -(- 0.0435)]/ 0.0783 = 0.829

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.829) = 20.72 ug/L

Example Spreadsheet Calculation:

Slope from curve, m:	0.0783	
Intercept from curve, b:	-0.0435	
Area of analyte, Ax:	16790	
Area of Internal Standard , Ais:	784484	
Concentration of IS, Cis	25.00	ug/L
Response Ratio (y) :	0.021403	
Amount Ratio:	0.828897	
Concentration (Cx):	20.72241	ug/L

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**0.0259**	
Value of B from plot:	**0.0596**	
Value of C from plot:	**-0.0165**	
Area of analyte from quantitation report:	**203233**	
Area of IS from quantiation report:	**1425653**	
Response ratio, y:	**0.142554**	
C - y:	**-0.15905**	
Root 1 - Computed amount ratio , X1:	**-3.88278**	
Root 2 - Computed amount ratio , X2:	**1.581623**	use this solution
Concentration of IS, Cis:	**40.00**	
Concentration of analyte, Cx:	**63.26**	ug/L

Microbac Laboratories Inc.
Sample Extract Log

00082598

Workgroup: WG309032
Analyst: RAH
Spike Analyst: RAH
Method: 3545
Run Date: 08/06/2009 08:10
SOP: ASE01 Revison 7
Spike Witness: CSH
Surr Solution: STD33058

Methylene Chloride Lot #: COA14020
Purified Lab Sand Lot #: COA13873
Diatomaceous Earth Lot #: COA13977
Sodium Sulfate,Anhydrous,Granular (Lot #: COA13907
1% Acetic Acid Lot #: RGT13669

	SAMPLE #	Type	Reference	Prod	Init Amnt	Surr Amnt	Spike Amnt	Spike Sol	Final Vol	Color
1	L09070704-01	SAMP		827-SPE-DIOX	20.81 g	.5 mL			1 mL	Colored
2	L09080082-01	SAMP		827-SPE	20.73 g	.5 mL			1 mL	Opaque
3	L09080082-02	SAMP		827-SPE	20.86 g	.5 mL			1 mL	Opaque
4	L09080106-03	SAMP		8270	18.04 g	.5 mL			1 mL	Transparent
5	WG309032-01	BLANK		827-SPE	20 g	.5 mL			1 mL	Transparent
6	WG309032-02	LCS		827-SPE	20 g	.5 mL	.5 mL	STD32121	1 mL	Colored
7	WG309032-03	LCS2		827-SPE	20 g	.5 mL	.5 mL	STD32121	1 mL	Colored
8	WG309032-04	LCS		827-SPE	20 g	.5 mL	.05 mL	STD31351	1 mL	Transparent

L09070704-01	REEXT IN HOLD

Analyst: RAH

Reviewer: Chris Hill

EXTRACT - Modified 10/22/2008
PDF ID: 1459697
Report generated: 08/06/2009 13:01

Microbac®

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS5 Dataset: 052609
Analyst1: CAA Analyst2: NA
Method: 8270C SOP: MSS01 Rev: 16
Method: 625 SOP: MSS02 Rev: 8

Maintenance Log ID: 28848

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG303250, WG303249, WG303247

Internal STD: COA13725 Surrogate STD: NA Calibration STD

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	5M54845	WG303119-01 50ppm DFTPP STD	1	1	STD31842	05/26/09 08:31
2	5M54846	WG303119-02 50ppm Megamix STD	1	1	STD31920	05/26/09 08:53
3	5M54847	WG303119-03 3ppm Megamix STD	1	1	STD31920	05/26/09 09:28
4	5M54848	WG303119-04 10ppm Megamix STD	1	1	STD31920	05/26/09 10:02
5	5M54849	WG303119-05 15ppm Megamix STD	1	1	STD31920	05/26/09 10:36
6	5M54850	WG303119-06 25ppm Megamix STD	1	1	STD31920	05/26/09 11:11
7	5M54851	WG303119-07 80ppm Megamix STD	1	1	STD31920	05/26/09 11:45
8	5M54852	WG303119-08 100ppm Megamix STD	1	1	STD31920	05/26/09 12:20
9	5M54853	WG303119-09 120ppm Megamix STD	1	1	STD31920	05/26/09 12:55
10	5M54854	WG303119-08 100ppm Megamix STD	1	1	STD31920	05/26/09 13:38
11	5M54855	WG303119-10 50ppm BNA Alt Src STD	1	1	STD31858	05/26/09 14:12
12	5M54856	WG303119-11 50ppm A9 Alt Src STD	1	1	STD30677	05/26/09 14:47
13	5M54857	WG303119-12 50ppm 1,4-Dioxane Alt Src ST	1	1	STD30264	05/26/09 15:22
14	5M54858	WG303169-01 50ppm DFTPP STD	1	1	STD31842	05/26/09 15:48
15	5M54859	WG303169-02 50ppm Megamix STD	1	1	STD31920	05/26/09 16:08
16	5M54860	WG302499-02 BLK 5/18	1	1		05/26/09 16:43
17	5M54861	WG302499-03 LCS 5/18	1	1		05/26/09 17:18
18	5M54862	WG302713-01 BLK 5/20	11	1		05/26/09 17:52
19	5M54863	WG302713-02 LCS 5/20	11	1		05/26/09 18:27
20	5M54864	WG302713-03 LCS DUP 5/20	11	1		05/26/09 19:02
21	5M54865	WG302319-01 BLK 5/14	10	1	SOIL	05/26/09 19:36
22	5M54866	WG302319-02 LCS 5/14	10	1	SOIL	05/26/09 20:11
23	5M54867	WG302319-03 LCS DUP 5/14	10	1	SOIL	05/26/09 20:46
24	5M54868	L09050337-01	1	1		05/26/09 21:20
25	5M54869	L09050337-02 REF	1	1		05/26/09 21:55
26	5M54870	L09050337-03	1	1		05/26/09 22:29
27	5M54871	L09050337-04	1	1		05/26/09 23:04
28	5M54872	L09050337-05	1	1		05/26/09 23:38
29	5M54873	L09050337-10	1	1		05/27/09 00:12
30	5M54874	L09050337-11 MS	1	1		05/27/09 00:46
31	5M54875	L09050337-12 MSD	1	1		05/27/09 01:21
32	5M54876	L09050304-01 10X	10	10		05/27/09 01:55
33	5M54877	L09050417-03 10X	11	10		05/27/09 02:29
34	5M54878	L09050304-02 20X	10	20		05/27/09 03:04
35	5M54879	L09050304-03 20X	10	20		05/27/09 03:38

Approved: 27-MAY-09

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS5 Dataset: 052609
Analyst1: CAA Analyst2: NA
Method: 8270C SOP: MSS01 Rev: 16
Method: 625 SOP: MSS02 Rev: 8

Maintenance Log ID: 28848

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG303250, WG303249, WG303247

Internal STD: COA13725 Surrogate STD: NA

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
36	5M54880	BAKEOUT	1	1		05/27/09 04:12

Comments

Seq.	Rerun	Dil.	Reason	Analytes
17				
	WG302499-03 LCS 5/18 - butyl benzyl phthalate marginally high.			
27				
	L09050337-04 - SS TPH low.			
28				
	L09050337-05 - SS TPH low.			
29				
	L09050337-10 - SS TPH low.			
30				
	L09050337-11 MS - SS TPH low.			
31				
	L09050337-12 MSD - SS TPH low.			
32				
	L09050304-01 10X - Analyzed at a dilution due to extract viscosity.			
33				
	L09050417-03 10X - Analyzed at a dilution due to extract viscosity; SS NBZ high, SMI.			
34				
	L09050304-02 20X - Analyzed at a diltution due to viscosity.			
35				
	L09050304-03 20X - Analyzed at a dilution due to viscosity.			

Page: 2 Approved: 27-MAY-09

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS5 Dataset: 080609
Analyst1: CAA Analyst2: NA
Method: 8270C SOP: MSS01 Rev: 16
Method: 625 SOP: MSS02 Rev: 8

Maintenance Log ID: 29702

Column 1 ID: RXI-5MS Column 2 ID: NA

Workgroups: WG309160, WG309173

Internal STD: COA13928 Surrogate STD: NA Calibration STD

Comments:

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	5M55544	WG309159-01 50ppm DFTPP STD	1	1	STD31842	08/06/09 13:08
2	5M55545	WG309159-02 50ppm Megamix STD	1	1	STD34003	08/06/09 13:28
3	5M55546	WG309032-01 BLK 8/6	7	1	SOIL	08/06/09 14:02
4	5M55547	WG309032-02 LCS 8/6	7	1	SOIL	08/06/09 14:37
5	5M55548	WG309032-03 LCS DUP 8/6	7	1	SOIL	08/06/09 15:12
6	5M55549	WG309039-01 BLK 8/6	2	1		08/06/09 15:46
7	5M55550	WG309039-02 LCS 8/6	2	1		08/06/09 16:21
8	5M55551	WG309039-03 LCS DUP 8/6	2	1		08/06/09 16:55
9	5M55552	WG309030-01 FBLK	17	1		08/06/09 17:30
10	5M55553	L09080106-03	7	1	SOIL	08/06/09 18:05
11	5M55554	L09080060-01	17	1		08/06/09 18:39
12	5M55555	L09080060-02	17	1		08/06/09 19:14
13	5M55556	L09080060-03	17	1		08/06/09 19:48
14	5M55557	L09080060-04	17	1		08/06/09 20:23
15	5M55558	L09080060-05	17	1		08/06/09 20:57
16	5M55559	L09080060-06	17	1		08/06/09 21:32
17	5M55560	L09080060-07	17	1		08/06/09 22:06
18	5M55561	L09080060-08	17	1		08/06/09 22:40
19	5M55562	L09070704-01 RE	7	1	SOIL	08/06/09 23:14
20	5M55563	L09080082-01	7	1	SOIL	08/06/09 23:49
21	5M55564	L09080082-02	7	1	SOIL	08/07/09 00:23
22	5M55565	BAKEOUT	1	1		08/07/09 00:57
23	5M55566	L09080074-01	2	1		08/07/09 01:31
24	5M55567	L09080099-04	2	1		08/07/09 02:05
25	5M55568	L09080099-06	2	1		08/07/09 02:39
26	5M55569	L09080099-08	2	1		08/07/09 03:13

Comments

Seq.	Rerun	Dil.	Reason	Analytes

Page: 1 Approved: 07-AUG-09

Microbac

Microbac Laboratories Inc.

Data Checklist

Date: 26-MAY-2009
Analyst: CAA
Analyst: NA
Method: 8270
Instrument: HPMS5
Curve Workgroup: NA
Runlog ID: 28245
Analytical Workgroups: L09050337, L09050304, L09050417

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	X
Average RF	X
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	X
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	X
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
Internal standard areas (MS)	X
Library searches (MS)	X
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	CAA
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
27-MAY-2009
Cassie L. Augenstein

Secondary Reviewer:
27-MAY-2009
Michael Cochran

CHECKLIST1 - Modified 03/05/2008
Generated: MAY-27-2009 11:41:42

Microbac Laboratories Inc.

Data Checklist

Date: 06-AUG-2009
Analyst: CAA
Analyst: NA
Method: 8270
Instrument: HPMS5
Curve Workgroup: NA
Runlog ID: 29507
Analytical Workgroups: L09080106, 080060, 070704, 080082, 080074, 080099

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	X
Endrin/DDT breakdown (8081/MS)	X
Pentachlorophenol/benzidine tailing (MS)	X
Eluent check (IC)/system pressure (HPLC)	NA
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	X
Continuing calibration blank (CCB) (IC)	NA
Special standards	NA
Blanks	X
TCL hits	X
Surrogate recoveries	X
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	X
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	X
Surrogate recoveries	X
Internal standard areas (MS)	X
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	NA
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	CAA
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	MDC

Primary Reviewer:
07-AUG-2009

Secondary Reviewer:
07-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-07-2009 08:33:53

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00082604

Analytical Method: 8270C **AAB#:** WG309160

Login Number: L09080106

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRCL01	03	08/05/09					08/06/09	.8	14		08/06/09	.4	14	
PRCL01	03	08/05/09					08/06/09	.8	14		08/06/09	.4	40	

*** = SEE PROJECT QAPP REQUIREMENTS**

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1460729
Report generated 08/07/2009 11:09

Login Number: L09080106
Instrument Id: HPMS5
Workgroup (AAB#): WG309160

Method: 8270
CAL ID: HPMS5-26-MAY-09
Matrix: Soil

Sample Number	Dilution	Tag	1	2	3	4	5	6
L09080106-03	1.00	01	91.0	70.5	67.8	71.0	84.0	64.2
WG309032-01	1.00	01	80.2	57.7	56.5	58.1	82.9	53.0
WG309032-02	1.00	01	113	53.5	53.8	50.9	92.3	50.3
WG309032-03	1.00	01	98.6	53.5	51.4	49.1	79.6	48.2

Surrogates	Surrogate Limits		
1 - 2,4,6-Tribromophenol	19	-	122
2 - 2-Fluorobiphenyl	30	-	115
3 - 2-Fluorophenol	25	-	121
4 - Nitrobenzene-d5	23	-	120
5 - p-Terphenyl-d14	18	-	137
6 - Phenol-d5	24	-	113

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1460100
Report generated: 08/07/2009 11:11

METHOD BLANK SUMMARY

Login Number:	L09080106	Work Group:	WG309160
Blank File ID:	5M55546	Blank Sample ID:	WG309032-01
Prep Date:	08/06/09 08:10	Instrument ID:	HPMS5
Analyzed Date:	08/06/09 14:02	Method:	8270C
Analyst:	CAA		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309032-02	5M55547	08/06/09 14:37	01
LCS2	WG309032-03	5M55548	08/06/09 15:12	01
PRCL01	L09080106-03	5M55553	08/06/09 18:05	01

Report Name: BLANK_SUMMARY
PDF File ID: 1460730
Report generated 08/07/2009 11:09

Login Number:L09080106 Prep Date:08/06/09 08:10 Sample ID:WG309032-01
Instrument ID:HPMS5 Run Date:08/06/09 14:02 Prep Method:3545
File ID:5M55546 Analyst:CAA Method:8270C
Workgroup (AAB#):WG309160 Matrix:Soil Units:ug/kg
Contract #:DACA56-94-D-0020 Cal ID: HPMS5-26-MAY-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
1,2,4-Trichlorobenzene	82.5	165	82.5	1	U
1,2-Dichlorobenzene	82.5	165	82.5	1	U
1,3-Dichlorobenzene	82.5	165	82.5	1	U
1,4-Dichlorobenzene	82.5	165	82.5	1	U
2,4,5-Trichlorophenol	82.5	165	82.5	1	U
2,4,6-Trichlorophenol	82.5	165	82.5	1	U
2,4-Dichlorophenol	82.5	165	82.5	1	U
2,4-Dimethylphenol	82.5	165	82.5	1	U
2,4-Dinitrophenol	330	825	330	1	U
2,4-Dinitrotoluene	82.5	165	82.5	1	U
2,6-Dinitrotoluene	82.5	165	82.5	1	U
2-Chloronaphthalene	82.5	165	82.5	1	U
2-Chlorophenol	82.5	165	82.5	1	U
2-Methylnaphthalene	82.5	165	82.5	1	U
2-Methylphenol	82.5	165	82.5	1	U
2-Nitroaniline	330	825	330	1	U
2-Nitrophenol	82.5	165	82.5	1	U
3,3'-Dichlorobenzidine	165	330	165	1	U
3-,4-Methylphenol	82.5	165	82.5	1	U
3-Nitroaniline	330	825	330	1	U
4,6-Dinitro-2-methylphenol	330	825	330	1	U
4-Bromophenyl-phenylether	82.5	165	82.5	1	U
4-Chloro-3-methylphenol	82.5	165	82.5	1	U
4-Chloroaniline	82.5	165	82.5	1	U
4-Chlorophenyl-phenyl ether	82.5	165	82.5	1	U
4-Nitroaniline	330	825	330	1	U
4-Nitrophenol	330	825	330	1	U
Acenaphthene	82.5	165	82.5	1	U
Acenaphthylene	82.5	165	82.5	1	U
Anthracene	82.5	165	82.5	1	U
Benzo(a)anthracene	82.5	165	82.5	1	U
Benzo(a)pyrene	82.5	165	82.5	1	U
Benzo(b)fluoranthene	82.5	165	82.5	1	U
Benzo(g,h,i)Perylene	82.5	165	82.5	1	U
Benzo(k)fluoranthene	82.5	165	82.5	1	U
Benzoic acid	330	5000	330	1	U
Benzyl alcohol	82.5	165	82.5	1	U
Bis(2-Chloroethoxy)Methane	82.5	165	82.5	1	U
Bis(2-Chloroethyl)ether	82.5	165	82.5	1	U
bis(2-Chloroisopropyl)ether	82.5	165	82.5	1	U
bis(2-Ethylhexyl)phthalate	82.5	165	82.5	1	U
Butylbenzylphthalate	82.5	165	82.5	1	U

Report Name:BLANK
PDF ID: 1460098
07-AUG-2009 11:10

Microbac Laboratories Inc.

METHOD BLANK REPORT

00082608

Login Number:L09080106 Prep Date:08/06/09 08:10 Sample ID:WG309032-01
Instrument ID:HPMS5 Run Date:08/06/09 14:02 Prep Method:3545
File ID:5M55546 Analyst:CAA Method:8270C
Workgroup (AAB#):WG309160 Matrix:Soil Units:ug/kg
Contract #:DACA56-94-D-0020 Cal ID: HPMS5-26-MAY-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Chrysene	82.5	165	82.5	1	U
Di-N-Butylphthalate	82.5	165	82.5	1	U
Di-n-octylphthalate	82.5	165	82.5	1	U
Dibenzo(a,h)Anthracene	82.5	165	82.5	1	U
Dibenzofuran	82.5	165	82.5	1	U
Diethylphthalate	82.5	165	82.5	1	U
Dimethylphthalate	82.5	165	82.5	1	U
Fluoranthene	82.5	165	82.5	1	U
Fluorene	82.5	165	82.5	1	U
Hexachlorobenzene	82.5	165	82.5	1	U
Hexachlorobutadiene	82.5	165	82.5	1	U
Hexachlorocyclopentadiene	82.5	165	82.5	1	U
Hexachloroethane	82.5	165	82.5	1	U
Indeno(1,2,3-cd)pyrene	82.5	165	82.5	1	U
Isophorone	82.5	165	82.5	1	U
N-Nitrosodiphenylamine	82.5	165	82.5	1	U
N-Nitrosodipropylamine	82.5	165	82.5	1	U
Naphthalene	82.5	165	82.5	1	U
Nitrobenzene	82.5	165	82.5	1	U
Pentachlorophenol	330	825	330	1	U
Phenanthrene	82.5	165	82.5	1	U
Phenol	82.5	165	82.5	1	U
Pyrene	82.5	165	82.5	1	U

Surrogates	% Recovery	Surrogate Limits			Qualifier
2,4,6-Tribromophenol	80.2	19	-	122	PASS
2-Fluorobiphenyl	57.7	30	-	115	PASS
2-Fluorophenol	56.5	25	-	121	PASS
Nitrobenzene-d5	58.1	23	-	120	PASS
p-Terphenyl-d14	82.9	18	-	137	PASS
Phenol-d5	53.0	24	-	113	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1460098
07-AUG-2009 11:10

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00082609

Login Number: L09080106 Analyst: CAA Prep Method: 3545
Instrument ID: HPMS5 Matrix: Soil Method: 8270C
Workgroup (AAB#): WG309160 Units: ug/kg
QC Key: STD Lot #: STD32121

Sample ID: WG309032-02 LCS File ID: 5M55547 Run Date: 08/06/2009 14:37
Sample ID: WG309032-03 LCS2 File ID: 5M55548 Run Date: 08/06/2009 15:12

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
1,2,4-Trichlorobenzene	2500	1250	49.9	2500	1240	49.7	0.461	35 - 100	40	
1,2-Dichlorobenzene	2500	1330	53.1	2500	1300	52.2	1.74	35 - 95	40	
1,3-Dichlorobenzene	2500	1320	52.8	2500	1300	51.8	1.91	35 - 100	40	
1,4-Dichlorobenzene	2500	1300	52.0	2500	1280	51.2	1.54	35 - 105	40	
2,4,5-Trichlorophenol	2500	1600	64.2	2500	1590	63.7	0.757	40 - 110	40	
2,4,6-Trichlorophenol	2500	1420	56.9	2500	1440	57.7	1.51	40 - 110	40	
2,4-Dichlorophenol	2500	1240	49.7	2500	1260	50.3	1.19	35 - 110	40	
2,4-Dimethylphenol	2500	1210	48.2	2500	1220	48.8	1.20	30 - 105	40	
2,4-Dinitrophenol	2500	2400	95.9	2500	2270	90.7	5.55	40 - 130	40	
2,4-Dinitrotoluene	2500	2300	91.8	2500	2140	85.7	6.85	50 - 130	40	
2,6-Dinitrotoluene	2500	1870	74.9	2500	1710	68.4	8.99	50 - 125	40	
2-Chloronaphthalene	2500	1180	47.2	2500	1200	47.9	1.34	40 - 105	40	
2-Chlorophenol	2500	1200	48.0	2500	1190	47.8	0.485	35 - 105	40	
2-Methylnaphthalene	2500	1320	53.0	2500	1350	54.0	1.93	35 - 115	40	
2-Methylphenol	2500	1240	49.8	2500	1180	47.4	4.89	35 - 100	40	
2-Nitroaniline	2500	1830	73.1	2500	1710	68.6	6.43	45 - 120	40	
2-Nitrophenol	2500	1230	49.2	2500	1220	48.9	0.464	35 - 100	40	
3,3'-Dichlorobenzidine	2500	2110	84.3	2500	2090	83.7	0.700	40 - 140	40	
3-,4-Methylphenol	2500	1400	55.8	2500	1420	56.8	1.72	35 - 105	40	
3-Nitroaniline	2500	2080	83.2	2500	1760	70.3	16.7	50 - 130	40	
4,6-Dinitro-2-methylphenol	2500	2440	97.6	2500	2310	92.3	5.65	45 - 130	40	
4-Bromophenyl-phenylether	2500	2010	80.4	2500	1860	74.5	7.59	40 - 115	40	
4-Chloro-3-methylphenol	2500	1310	52.2	2500	1320	52.9	1.39	40 - 100	40	
4-Chloroaniline	2500	1110	44.5	2500	1030	41.4	7.23	35 - 100	40	
4-Chlorophenyl-phenyl ether	2500	1780	71.1	2500	1670	66.8	6.29	40 - 110	40	
4-Nitroaniline	2500	2330	93.1	2500	2150	86.1	7.78	35 - 140	40	
4-Nitrophenol	2500	2020	81.0	2500	1880	75.2	7.38	45 - 140	40	
Acenaphthene	2500	1540	61.7	2500	1520	60.7	1.77	40 - 110	40	
Acenaphthylene	2500	1450	57.8	2500	1460	58.4	0.900	40 - 110	40	
Anthracene	2500	2260	90.5	2500	2090	83.6	7.88	55 - 130	40	
Benzo(a)anthracene	2500	2140	85.6	2500	2040	81.5	5.00	50 - 130	40	
Benzo(a)pyrene	2500	2370	94.8	2500	2250	90.2	5.02	50 - 130	40	
Benzo(b)fluoranthene	2500	2180	87.2	2500	1960	78.6	10.4	45 - 125	40	
Benzo(g,h,i)Perylene	2500	2540	102	2500	2420	96.8	4.93	40 - 140	40	
Benzo(k)fluoranthene	2500	2530	101	2500	2280	91.1	10.4	45 - 135	40	
Benzoic acid	2500	2320	92.9	2500	2440	97.4	4.76	20 - 110	40	
Benzyl alcohol	2500	1190	47.6	2500	1170	46.9	1.49	30 - 100	40	
Bis(2-Chloroethoxy)Methane	2500	930	37.2	2500	948	37.9	1.86	30 - 100	40	
Bis(2-Chloroethyl)ether	2500	1260	50.4	2500	1240	49.6	1.64	30 - 100	40	
bis(2-Chloroisopropyl)ether	2500	1290	51.7	2500	1270	50.9	1.57	20 - 115	40	

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1460099
Report generated: 08/07/2009 11:10

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00082610

Login Number: L09080106 Analyst: CAA Prep Method: 3545
Instrument ID: HPMS5 Matrix: Soil Method: 8270C
Workgroup (AAB#): WG309160 Units: ug/kg
QC Key: STD Lot #: STD32121

Sample ID: WG309032-02 LCS File ID: 5M55547 Run Date: 08/06/2009 14:37
Sample ID: WG309032-03 LCS2 File ID: 5M55548 Run Date: 08/06/2009 15:12

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
bis(2-Ethylhexyl)phthalate	2500	2340	93.7	2500	2240	89.5	4.61	50 - 150	40	
Butylbenzylphthalate	2500	3200	128	2500	2960	118	7.89	50 - 150	40	
Chrysene	2500	2240	89.6	2500	2100	84.0	6.52	55 - 140	40	
Di-N-Butylphthalate	2500	2600	104	2500	2480	99.2	4.50	55 - 140	40	
Di-n-octylphthalate	2500	2510	100	2500	2400	96.0	4.46	40 - 145	40	
Dibenzo(a,h)Anthracene	2500	2470	98.8	2500	2360	94.4	4.57	40 - 140	40	
Dibenzofuran	2500	1590	63.5	2500	1570	62.9	1.03	35 - 110	40	
Diethylphthalate	2500	2440	97.4	2500	2210	88.5	9.55	50 - 130	40	
Dimethylphthalate	2500	2060	82.3	2500	1910	76.3	7.55	45 - 115	40	
Fluoranthene	2500	2590	104	2500	2440	97.5	6.04	55 - 140	40	
Fluorene	2500	1760	70.3	2500	1640	65.7	6.83	45 - 115	40	
Hexachlorobenzene	2500	2200	87.8	2500	2030	81.0	8.05	45 - 120	40	
Hexachlorobutadiene	2500	1450	57.9	2500	1420	56.6	2.32	30 - 100	40	
Hexachlorocyclopentadiene	2500	1370	54.6	2500	1320	52.9	3.23	30 - 110	40	
Hexachloroethane	2500	1350	53.9	2500	1320	52.7	2.40	30 - 100	40	
Indeno(1,2,3-cd)pyrene	2500	2460	98.5	2500	2330	93.4	5.38	50 - 135	40	
Isophorone	2500	1110	44.3	2500	1140	45.6	2.88	35 - 100	40	
N-Nitrosodiphenylamine	2500	1760	70.4	2500	1640	65.5	7.30	50 - 130	40	
N-Nitrosodipropylamine	2500	1310	52.4	2500	1330	53.0	1.24	35 - 110	40	
Naphthalene	2500	1210	48.4	2500	1190	47.6	1.71	35 - 100	40	
Nitrobenzene	2500	1210	48.5	2500	1180	47.3	2.32	35 - 100	40	
Pentachlorophenol	2500	2700	108	2500	2530	101	6.52	50 - 150	40	
Phenanthrene	2500	2190	87.4	2500	2020	80.8	7.86	50 - 130	40	
Phenol	2500	1190	47.7	2500	1180	47.0	1.39	35 - 100	40	
Pyrene	2500	2140	85.5	2500	2010	80.4	6.21	35 - 140	40	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
2,4,6-Tribromophenol	113	98.6	19 - 122	PASS
2-Fluorobiphenyl	53.5	53.5	30 - 115	PASS
2-Fluorophenol	53.8	51.4	25 - 121	PASS
Nitrobenzene-d5	50.9	49.1	23 - 120	PASS
p-Terphenyl-d14	92.3	79.6	18 - 137	PASS
Phenol-d5	50.3	48.2	24 - 113	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1460099
Report generated: 08/07/2009 11:10

DFTPP

Login Number: L09080106
Instrument: HPMS5
Analyst: CAA
Workgroup: WG303119

Tune ID: WG303119-01
Run Date: 05/26/2009
Run Time: 08:31
File ID: 5M54845
Cal ID: HPMS5-26-MAY-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	32.3	165096	PASS
68.0	69.0	0	2.00	0	0	PASS
69.0	198	0	100	32.6	166976	PASS
70.0	69.0	0	2.00	0.514	858	PASS
127	198	40.0	60.0	42.9	219157	PASS
197	198	0	1.00	0	0	PASS
198	198	100	100	100	511445	PASS
199	198	5.00	9.00	6.86	35109	PASS
275	198	10.0	30.0	26.4	134912	PASS
365	198	1.00	100	3.34	17091	PASS
441	443	0.0100	100	84.7	73842	PASS
442	198	40.0	100	84.7	432981	PASS
443	442	17.0	23.0	20.1	87136	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG303119-02	STD-CCV	01	05/26/2009 08:53	
WG303119-03	STD	01	05/26/2009 09:28	
WG303119-04	STD	01	05/26/2009 10:02	
WG303119-05	STD	01	05/26/2009 10:36	
WG303119-06	STD	01	05/26/2009 11:11	
WG303119-07	STD	01	05/26/2009 11:45	
WG303119-09	STD	01	05/26/2009 12:55	
WG303119-08	STD	01	05/26/2009 13:38	
WG303119-10	SSCV	01	05/26/2009 14:12	
WG303119-11	SSCV	01	05/26/2009 14:47	
WG303119-12	SSCV	01	05/26/2009 15:22	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1460733
Report generated 08/07/2009 11:11

DFTPP

Login Number: L09080106
Instrument: HPMS5
Analyst: CAA
Workgroup: WG309159

Tune ID: WG309159-01
Run Date: 08/06/2009
Run Time: 13:08
File ID: 5M55544
Cal ID: HPMS5-26-MAY-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
51.0	198	30.0	60.0	50.1	112983	PASS
68.0	69.0	0	2.00	0.658	601	PASS
69.0	198	0	100	40.5	91288	PASS
70.0	69.0	0	2.00	0.238	217	PASS
127	198	40.0	60.0	48.8	110125	PASS
197	198	0	1.00	0.147	332	PASS
198	198	100	100	100	225557	PASS
199	198	5.00	9.00	6.70	15116	PASS
275	198	10.0	30.0	28.8	64978	PASS
365	198	1.00	100	6.05	13649	PASS
441	443	0.0100	100	80.1	32298	PASS
442	198	40.0	100	88.1	198760	PASS
443	442	17.0	23.0	20.3	40298	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG309159-02	CCV	01	08/06/2009 13:28	
WG309032-01	BLANK	01	08/06/2009 14:02	
WG309032-02	LCS	01	08/06/2009 14:37	
WG309032-03	LCS2	01	08/06/2009 15:12	
L09080106-03	PRCL01	01	08/06/2009 18:05	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1460733
Report generated 08/07/2009 11:11

Login Number: L09080106 **Instrument ID:** HPMS5
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 13:38
ICAL Workgroup: WG303119 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
1,4-Dichlorobenzene	CCC	1.607	6.24		
2,4,6-Trichlorophenol	CCC	0.4372	3.88		
2,4-Dichlorophenol	CCC	0.3141	4.59		
2-Nitrophenol	CCC	0.2010	6.79		
4-Chloro-3-Methylphenol	CCC	0.3011	4.52		
Acenaphthene	CCC	1.236	6.07		
Benzo[a]pyrene	CCC	1.129	4.82		
Di-n-Octyl Phthalate	CCC	1.353	5.06		
Fluoranthene	CCC	1.409	6.82		
Hexachlorobutadiene	CCC	0.2254	4.01		
Pentachlorophenol	CCC	0.1705	18.7	0.99700	
Phenol	CCC	1.654	7.12		
2,4-Dinitrophenol	SPCC	0.1666	23.5	0.99300	
4-Nitrophenol	SPCC	0.2924	9.58		
Hexachlorocyclopentadiene	SPCC	0.3226	9.97		
n-Nitrosodipropylamine	SPCC	0.9013	11.3		
1,2,4-Trichlorobenzene		0.3457	6.27		
1,2-Dichlorobenzene		1.485	5.74		
1,3-Dichlorobenzene		1.565	5.36		
2,4,5-Trichlorophenol		0.4580	3.86		
2,4-Dimethylphenol		0.3096	9.86		
2,4-Dinitrotoluene		0.4801	5.60		
2,6-Dinitrotoluene		0.3636	4.99		
2-Chloronaphthalene		1.494	7.82		
2-Chlorophenol		1.370	4.51		
2-Methylnaphthalene		0.6611	6.86		
2-Methylphenol		1.086	4.13		
2-Nitroaniline		0.3700	3.99		
3,3'-Dichlorobenzidine		0.4415	4.52		
3-Nitroaniline		0.3624	2.79		
4,6-Dinitro-2-Methylphenol		0.1577	13.6		
4-Bromophenyl Phenyl Ether		0.2911	6.42		
4-Chloroaniline		0.4350	5.95		
4-Chlorophenyl Phenyl Ether		0.7231	7.79		
4-Nitroaniline		0.3705	6.09		
Acenaphthylene		1.971	8.39		
Anthracene		1.305	7.32		
Benzo[a]anthracene		1.271	5.67		
Benzo[b]fluoranthene		1.371	11.2		
Benzo[ghi]perylene		0.9791	6.21		
Benzo[k]fluoranthene		1.056	7.57		
Benzoic Acid		0.1140	62.8		0.99900
Benzyl Alcohol		0.9039	4.48		
Butyl Benzyl Phthalate		0.5356	18.5		0.99600
Chrysene		1.176	5.38		

INT_CAL - Modified 03/06/2008
PDF File ID: 1460731
Report generated 08/07/2009 11:10

Login Number: L09080106 **Instrument ID:** HPMS5
Analytical Method: 8270C **Initial Calibration Date:** 26-MAY-09 13:38
ICAL Workgroup: WG303119 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
Di-n-Butyl Phthalate		1.527	10.2		
Dibenz[ah]anthracene		1.062	3.13		
Dibenzofuran		1.742	10.5		
Diethylphthalate		1.467	6.67		
Dimethylphthalate		1.501	6.90		
Fluorene		1.519	7.61		
Hexachlorobenzene		0.3201	7.43		
Hexachloroethane		0.6338	4.06		
Indeno[1,2,3-cd]pyrene		1.261	3.45		
Isophorone		0.7203	7.72		
Naphthalene		1.008	9.26		
Nitrobenzene		0.3863	6.72		
Phenanthrene		1.298	7.61		
Pyrene		1.220	8.77		
bis(2-Chloroethoxy)methane		0.5404	12.4		
bis(2-Chloroethyl)ether		1.113	8.44		
bis(2-Chloroisopropyl)ether		2.362	9.95		
bis(2-Ethylhexyl)phthalate		0.8279	10.4		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

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Login Number: L09080106
Analytical Method: 8270C
Instrument ID: HPMS5
Initial Calibration Date: 26-MAY-09 13:38
Column ID: F

Analyte	WG303119-02			WG303119-03			WG303119-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,4-Dichlorobenzene	50.0	348435.000	1.533	3.00	24216.0000	1.806	10.0	80458.0000	1.601
2,4,6-Trichlorophenol	50.0	205158.000	0.4203	3.00	12422.0000	0.4580	10.0	43384.0000	0.4192
2,4-Dichlorophenol	50.0	268436.000	0.3053	3.00	17389.0000	0.3439	10.0	58837.0000	0.3093
2-Nitrophenol	50.0	167242.000	0.1902	3.00	11327.0000	0.2240	10.0	38866.0000	0.2043
4-Chloro-3-Methylphenol	50.0	260311.000	0.2960	3.00	16567.0000	0.3277	10.0	56459.0000	0.2968
Acenaphthene	50.0	566331.000	1.160	3.00	37024.0000	1.365	10.0	129093.000	1.247
Benzo[a]pyrene	50.0	1120452.00	1.109	3.00	67990.0000	1.169	10.0	234142.000	1.042
Di-n-Octyl Phthalate	50.0	1332366.00	1.318	3.00	85586.0000	1.471	10.0	296034.000	1.317
Fluoranthene	50.0	1058067.00	1.336	3.00	70351.0000	1.590	10.0	237907.000	1.409
Hexachlorobutadiene	50.0	191485.000	0.2178	3.00	12306.0000	0.2434	10.0	41901.0000	0.2203
Pentachlorophenol	50.0	138826.000	0.1753	NA	NA	NA	10.0	21152.0000	0.1252
Phenol	50.0	358994.000	1.579	3.00	25311.0000	1.887	10.0	83652.0000	1.665
2,4-Dinitrophenol	50.0	72604.0000	0.1487	NA	NA	NA	NA	NA	NA
4-Nitrophenol	50.0	138147.000	0.2830	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	50.0	160620.000	0.3291	3.00	7879.00000	0.2905	10.0	33520.0000	0.3239
n-Nitrosodipropylamine	50.0	193743.000	0.8522	3.00	14261.0000	1.063	10.0	47808.0000	0.9516
1,2,4-Trichlorobenzene	50.0	290111.000	0.3299	3.00	19802.0000	0.3916	10.0	65118.0000	0.3423
1,2-Dichlorobenzene	50.0	323024.000	1.421	3.00	22366.0000	1.668	10.0	73999.0000	1.473
1,3-Dichlorobenzene	50.0	338729.000	1.490	3.00	23235.0000	1.733	10.0	77732.0000	1.547
2,4,5-Trichlorophenol	50.0	216586.000	0.4437	3.00	12971.0000	0.4782	10.0	45553.0000	0.4402
2,4-Dimethylphenol	50.0	256352.000	0.2915	3.00	18639.0000	0.3686	10.0	60467.0000	0.3179
2,4-Dinitrotoluene	50.0	221317.000	0.4534	3.00	14241.0000	0.5250	10.0	49359.0000	0.4770
2,6-Dinitrotoluene	50.0	171071.000	0.3505	3.00	10836.0000	0.3995	10.0	36598.0000	0.3536
2-Chloronaphthalene	50.0	684786.000	1.403	3.00	46781.0000	1.725	10.0	155821.000	1.506
2-Chlorophenol	50.0	301413.000	1.326	3.00	19986.0000	1.490	10.0	67016.0000	1.334
2-Methylnaphthalene	50.0	557660.000	0.6342	3.00	37976.0000	0.7511	10.0	126602.000	0.6656
2-Methylphenol	50.0	240606.000	1.058	3.00	15667.0000	1.168	10.0	53361.0000	1.062
2-Nitroaniline	50.0	178714.000	0.3661	NA	NA	NA	NA	NA	NA
3,3'-Dichlorobenzidine	50.0	412082.000	0.4291	3.00	25908.0000	0.4823	10.0	89575.0000	0.4324
3-Nitroaniline	50.0	174933.000	0.3584	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-Methylphenol	50.0	118589.000	0.1498	NA	NA	NA	10.0	21212.0000	0.1256
4-Bromophenyl Phenyl Ether	50.0	215959.000	0.2728	3.00	13772.0000	0.3113	10.0	46245.0000	0.2738
4-Chloroaniline	50.0	372050.000	0.4231	3.00	24567.0000	0.4859	10.0	82857.0000	0.4356
4-Chlorophenyl Phenyl Ether	50.0	329931.000	0.6759	3.00	22319.0000	0.8229	10.0	76056.0000	0.7349
4-Nitroaniline	50.0	181414.000	0.3717	NA	NA	NA	NA	NA	NA
Acenaphthylene	50.0	904376.000	1.853	3.00	61659.0000	2.273	10.0	206449.000	1.995
Anthracene	50.0	985044.000	1.244	3.00	65550.0000	1.482	10.0	224378.000	1.329
Benzo[a]anthracene	50.0	1182461.00	1.231	3.00	76724.0000	1.428	10.0	256131.000	1.236
Benzo[b]fluoranthene	50.0	1268170.00	1.255	3.00	77791.0000	1.337	10.0	283289.000	1.260
Benzo[ghi]perylene	50.0	1006254.00	0.9956	3.00	62222.0000	1.069	10.0	213624.000	0.9502
Benzo[k]fluoranthene	50.0	1011250.00	1.001	3.00	70185.0000	1.206	10.0	222080.000	0.9878
Benzoic Acid	50.0	124484.000	0.1416	NA	NA	NA	10.0	6523.00000	0.03430

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Instrument ID: HPMS5
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Column ID: F

Analyte	WG303119-02			WG303119-03			WG303119-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Benzyl Alcohol	50.0	198777.000	0.8743	3.00	13201.0000	0.9844	10.0	44376.0000	0.8833
Butyl Benzyl Phthalate	50.0	472865.000	0.4924	3.00	37053.0000	0.6898	10.0	122838.000	0.5929
Chrysene	50.0	1106767.00	1.152	3.00	69993.0000	1.303	10.0	240404.000	1.160
Di-n-Butyl Phthalate	50.0	1148161.00	1.450	3.00	79472.0000	1.797	10.0	268666.000	1.591
Dibenz[ah]anthracene	50.0	1089351.00	1.078	3.00	62964.0000	1.082	10.0	224783.000	0.9999
Dibenzofuran	50.0	777611.000	1.593	3.00	56105.0000	2.069	10.0	187970.000	1.816
Diethylphthalate	50.0	683675.000	1.401	3.00	45132.0000	1.664	10.0	152951.000	1.478
Dimethylphthalate	50.0	695357.000	1.425	3.00	46467.0000	1.713	10.0	155262.000	1.500
Fluorene	50.0	700880.000	1.436	3.00	47271.0000	1.743	10.0	158947.000	1.536
Hexachlorobenzene	50.0	240933.000	0.3043	3.00	14783.0000	0.3342	10.0	49882.0000	0.2954
Hexachloroethane	50.0	140545.000	0.6182	3.00	9116.00000	0.6798	10.0	30958.0000	0.6162
Indeno[1,2,3-cd]pyrene	50.0	1286982.00	1.273	3.00	76734.0000	1.319	10.0	268291.000	1.193
Isophorone	50.0	605422.000	0.6885	3.00	42380.0000	0.8382	10.0	138409.000	0.7277
Naphthalene	50.0	845754.000	0.9619	3.00	59589.0000	1.179	10.0	198399.000	1.043
Nitrobenzene	50.0	327276.000	0.3722	3.00	22297.0000	0.4410	10.0	73906.0000	0.3886
Phenanthrene	50.0	968278.000	1.223	3.00	66007.0000	1.492	10.0	222000.000	1.315
Pyrene	50.0	1130751.00	1.177	3.00	75540.0000	1.406	10.0	256038.000	1.236
bis(2-Chloroethoxy)methane	50.0	447604.000	0.5091	3.00	33344.0000	0.6595	10.0	108308.000	0.5694
bis(2-Chloroethyl)ether	50.0	242067.000	1.065	3.00	17426.0000	1.299	10.0	57006.0000	1.135
bis(2-Chloroisopropyl)ether	50.0	513678.000	2.259	3.00	37330.0000	2.784	10.0	121284.000	2.414
bis(2-Ethylhexyl)phthalate	50.0	766686.000	0.7983	3.00	52916.0000	0.9851	10.0	175960.000	0.8493

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Analyte	WG303119-05			WG303119-06			WG303119-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,4-Dichlorobenzene	15.0	102695.000	1.685	25.0	141289.000	1.588	80.0	520217.000	1.518
2,4,6-Trichlorophenol	15.0	56065.0000	0.4449	25.0	78681.0000	0.4267	80.0	307457.000	0.4280
2,4-Dichlorophenol	15.0	75704.0000	0.3252	25.0	104616.000	0.3073	80.0	398421.000	0.3035
2-Nitrophenol	15.0	50016.0000	0.2148	25.0	69317.0000	0.2036	80.0	247124.000	0.1883
4-Chloro-3-Methylphenol	15.0	72953.0000	0.3134	25.0	100468.000	0.2951	80.0	382883.000	0.2917
Acenaphthene	15.0	164630.000	1.306	25.0	228763.000	1.241	80.0	836551.000	1.165
Benzo[a]pyrene	15.0	299911.000	1.116	25.0	421164.000	1.085	80.0	1669112.00	1.126
Di-n-Octyl Phthalate	15.0	381396.000	1.419	25.0	531714.000	1.369	80.0	1875649.00	1.266
Fluoranthene	15.0	307867.000	1.485	25.0	430688.000	1.419	80.0	1529455.00	1.321
Hexachlorobutadiene	15.0	52816.0000	0.2269	25.0	74018.0000	0.2174	80.0	290561.000	0.2214
Pentachlorophenol	15.0	29889.0000	0.1441	25.0	44978.0000	0.1482	80.0	218241.000	0.1884
Phenol	15.0	106273.000	1.744	25.0	145724.000	1.638	80.0	530822.000	1.549
2,4-Dinitrophenol	15.0	14701.0000	0.1167	25.0	24289.0000	0.1317	80.0	138039.000	0.1922
4-Nitrophenol	15.0	33984.0000	0.2697	25.0	47740.0000	0.2589	80.0	209920.000	0.2922
Hexachlorocyclopentadiene	15.0	45369.0000	0.3600	25.0	65504.0000	0.3552	80.0	235696.000	0.3281
n-Nitrosodipropylamine	15.0	60525.0000	0.9931	25.0	83444.0000	0.9377	80.0	273528.000	0.7980
1,2,4-Trichlorobenzene	15.0	83635.0000	0.3593	25.0	116279.000	0.3415	80.0	431379.000	0.3286
1,2-Dichlorobenzene	15.0	93505.0000	1.534	25.0	128724.000	1.447	80.0	490014.000	1.430
1,3-Dichlorobenzene	15.0	99667.0000	1.635	25.0	136647.000	1.536	80.0	515272.000	1.503
2,4,5-Trichlorophenol	15.0	58682.0000	0.4656	25.0	81761.0000	0.4434	80.0	323542.000	0.4504
2,4-Dimethylphenol	15.0	77383.0000	0.3324	25.0	106029.000	0.3114	80.0	371902.000	0.2833
2,4-Dinitrotoluene	15.0	63681.0000	0.5053	25.0	89429.0000	0.4850	80.0	325623.000	0.4533
2,6-Dinitrotoluene	15.0	47706.0000	0.3785	25.0	66047.0000	0.3582	80.0	249942.000	0.3480
2-Chloronaphthalene	15.0	198888.000	1.578	25.0	276337.000	1.499	80.0	993049.000	1.383
2-Chlorophenol	15.0	85916.0000	1.410	25.0	118554.000	1.332	80.0	454239.000	1.325
2-Methylnaphthalene	15.0	161561.000	0.6940	25.0	224051.000	0.6580	80.0	819953.000	0.6247
2-Methylphenol	15.0	68738.0000	1.128	25.0	95310.0000	1.071	80.0	364745.000	1.064
2-Nitroaniline	15.0	49460.0000	0.3925	25.0	68113.0000	0.3694	80.0	256679.000	0.3573
3,3'-Dichlorobenzidine	15.0	115335.000	0.4556	25.0	159433.000	0.4327	80.0	619893.000	0.4304
3-Nitroaniline	15.0	47326.0000	0.3755	25.0	66135.0000	0.3586	80.0	255491.000	0.3557
4,6-Dinitro-2-Methylphenol	15.0	29765.0000	0.1435	25.0	45139.0000	0.1487	80.0	201431.000	0.1739
4-Bromophenyl Phenyl Ether	15.0	59490.0000	0.2869	25.0	82440.0000	0.2716	80.0	333504.000	0.2880
4-Chloroaniline	15.0	106020.000	0.4554	25.0	146109.000	0.4291	80.0	545795.000	0.4158
4-Chlorophenyl Phenyl Ether	15.0	97521.0000	0.7738	25.0	133815.000	0.7257	80.0	484759.000	0.6749
4-Nitroaniline	15.0	51202.0000	0.4063	25.0	70269.0000	0.3811	80.0	252330.000	0.3513
Acenaphthylene	15.0	266551.000	2.115	25.0	369629.000	2.005	80.0	1302681.00	1.814
Anthracene	15.0	286832.000	1.383	25.0	395885.000	1.304	80.0	1414601.00	1.222
Benzo[a]anthracene	15.0	331773.000	1.311	25.0	460030.000	1.249	80.0	1756063.00	1.219
Benzo[b]fluoranthene	15.0	349596.000	1.301	25.0	484111.000	1.247	80.0	2026198.00	1.367
Benzo[ghi]perylene	15.0	278106.000	1.035	25.0	387280.000	0.9973	80.0	1428540.00	0.9640
Benzo[k]fluoranthene	15.0	306837.000	1.142	25.0	393054.000	1.012	80.0	1597206.00	1.078
Benzoic Acid	15.0	11570.0000	0.04970	25.0	25021.0000	0.07350	80.0	233724.000	0.1781

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Column ID: F

Analyte	WG303119-05			WG303119-06			WG303119-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
Benzyl Alcohol	15.0	56634.0000	0.9293	25.0	78355.0000	0.8805	80.0	300762.000	0.8774
Butyl Benzyl Phthalate	15.0	156398.000	0.6179	25.0	214380.000	0.5818	80.0	639832.000	0.4442
Chrysene	15.0	308759.000	1.220	25.0	432856.000	1.175	80.0	1620574.00	1.125
Di-n-Butyl Phthalate	15.0	341819.000	1.648	25.0	477799.000	1.574	80.0	1598061.00	1.380
Dibenz[ah]anthracene	15.0	288994.000	1.075	25.0	408163.000	1.051	80.0	1593841.00	1.076
Dibenzofuran	15.0	238737.000	1.894	25.0	326876.000	1.773	80.0	1121756.00	1.562
Diethylphthalate	15.0	192578.000	1.528	25.0	269527.000	1.462	80.0	986071.000	1.373
Dimethylphthalate	15.0	197815.000	1.570	25.0	275578.000	1.495	80.0	1009362.00	1.405
Fluorene	15.0	202829.000	1.609	25.0	280035.000	1.519	80.0	1014643.00	1.413
Hexachlorobenzene	15.0	63721.0000	0.3073	25.0	89094.0000	0.2935	80.0	375447.000	0.3242
Hexachloroethane	15.0	40006.0000	0.6564	25.0	54929.0000	0.6172	80.0	210751.000	0.6148
Indeno[1,2,3-cd]pyrene	15.0	346130.000	1.288	25.0	486373.000	1.252	80.0	1878846.00	1.268
Isophorone	15.0	175084.000	0.7521	25.0	241794.000	0.7102	80.0	881876.000	0.6719
Naphthalene	15.0	252344.000	1.084	25.0	345191.000	1.014	80.0	1215978.00	0.9264
Nitrobenzene	15.0	93298.0000	0.4008	25.0	129425.000	0.3801	80.0	480369.000	0.3660
Phenanthrene	15.0	283422.000	1.367	25.0	395409.000	1.303	80.0	1393798.00	1.204
Pyrene	15.0	332316.000	1.313	25.0	462636.000	1.256	80.0	1623157.00	1.127
bis(2-Chloroethoxy)methane	15.0	137571.000	0.5909	25.0	190326.000	0.5590	80.0	627401.000	0.4780
bis(2-Chloroethyl)ether	15.0	71801.0000	1.178	25.0	98544.0000	1.107	80.0	350979.000	1.024
bis(2-Chloroisopropyl)ether	15.0	152605.000	2.504	25.0	206766.000	2.323	80.0	711225.000	2.075
bis(2-Ethylhexyl)phthalate	15.0	225885.000	0.8924	25.0	313865.000	0.8518	80.0	1079178.00	0.7493

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Microbac Laboratories Inc.

INITIAL CALIBRATION DATA

00082619

Login Number: L09080106
Analytical Method: 8270C

Instrument ID: HPMS5
Initial Calibration Date: 26-MAY-09 13:38
Column ID: F

Analyte	WG303119-08			WG303119-09		
	CONC	RESP	RF	CONC	RESP	RF
1,4-Dichlorobenzene	100	577076.000	1.620	120	699837.000	1.504
2,4,6-Trichlorophenol	100	345214.000	0.4640	120	425716.000	0.4364
2,4-Dichlorophenol	100	439110.000	0.3175	120	541881.000	0.3009
2-Nitrophenol	100	274080.000	0.1982	120	332032.000	0.1844
4-Chloro-3-Methylphenol	100	419886.000	0.3036	120	512784.000	0.2847
Acenaphthene	100	929306.000	1.249	120	1125711.00	1.154
Benzo[a]pyrene	100	1832093.00	1.213	120	2255029.00	1.172
Di-n-Octyl Phthalate	100	2076288.00	1.375	120	2486551.00	1.293
Fluoranthene	100	1696220.00	1.416	120	2012444.00	1.296
Hexachlorobutadiene	100	323197.000	0.2337	120	399798.000	0.2220
Pentachlorophenol	100	247651.000	0.2067	120	318842.000	0.2053
Phenol	100	587021.000	1.648	120	708591.000	1.522
2,4-Dinitrophenol	100	154378.000	0.2075	120	197568.000	0.2025
4-Nitrophenol	100	240239.000	0.3229	120	319865.000	0.3279
Hexachlorocyclopentadiene	100	201777.000	0.2712	NA	NA	NA
n-Nitrosodipropylamine	100	302349.000	0.8489	120	356259.000	0.7654
1,2,4-Trichlorobenzene	100	479774.000	0.3469	120	585605.000	0.3251
1,2-Dichlorobenzene	100	535601.000	1.504	120	655390.000	1.408
1,3-Dichlorobenzene	100	563729.000	1.583	120	694748.000	1.493
2,4,5-Trichlorophenol	100	363283.000	0.4883	120	443003.000	0.4542
2,4-Dimethylphenol	100	411699.000	0.2977	120	492891.000	0.2737
2,4-Dinitrotoluene	100	364795.000	0.4903	120	440180.000	0.4513
2,6-Dinitrotoluene	100	275619.000	0.3705	120	340980.000	0.3496
2-Chloronaphthalene	100	1105742.00	1.486	120	1340954.00	1.375
2-Chlorophenol	100	503563.000	1.414	120	616970.000	1.325
2-Methylnaphthalene	100	906386.000	0.6554	120	1090495.00	0.6055
2-Methylphenol	100	393823.000	1.106	120	479484.000	1.030
2-Nitroaniline	100	283692.000	0.3813	120	344550.000	0.3532
3,3'-Dichlorobenzidine	100	681284.000	0.4488	120	829395.000	0.4208
3-Nitroaniline	100	278583.000	0.3744	120	342890.000	0.3515
4,6-Dinitro-2-Methylphenol	100	221380.000	0.1848	120	275724.000	0.1776
4-Bromophenyl Phenyl Ether	100	382649.000	0.3193	120	473880.000	0.3052
4-Chloroaniline	100	599918.000	0.4338	120	722716.000	0.4013
4-Chlorophenyl Phenyl Ether	100	538997.000	0.7245	120	636447.000	0.6525
4-Nitroaniline	100	275139.000	0.3698	120	334059.000	0.3425
Acenaphthylene	100	1443436.00	1.940	120	1732136.00	1.776
Anthracene	100	1546915.00	1.291	120	1836548.00	1.183
Benzo[a]anthracene	100	1946115.00	1.282	120	2381898.00	1.209
Benzo[b]fluoranthene	100	2524274.00	1.671	120	2949478.00	1.533
Benzo[ghi]perylene	100	1440375.00	0.9537	120	1670139.00	0.8682
Benzo[k]fluoranthene	100	1501981.00	0.9945	120	1971967.00	1.025
Benzoic Acid	100	285965.000	0.2068	NA	NA	NA

INT_CAL - Modified 03/06/2008
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Login Number: L09080106
Analytical Method: 8270C
Instrument ID: HPMS5
Initial Calibration Date: 26-MAY-09 13:38
Column ID: F

Analyte	WG303119-08			WG303119-09		
	CONC	RESP	RF	CONC	RESP	RF
Benzyl Alcohol	100	331552.000	0.9309	120	405633.000	0.8714
Butyl Benzyl Phthalate	100	699318.000	0.4607	120	797831.000	0.4048
Chrysene	100	1791342.00	1.180	120	2158195.00	1.095
Di-n-Butyl Phthalate	100	1745969.00	1.457	120	2052008.00	1.322
Dibenz[ah]anthracene	100	1665110.00	1.103	120	1979752.00	1.029
Dibenzofuran	100	1254492.00	1.686	120	1501918.00	1.540
Diethylphthalate	100	1094519.00	1.471	120	1328142.00	1.362
Dimethylphthalate	100	1114020.00	1.497	120	1365352.00	1.400
Fluorene	100	1119914.00	1.505	120	1355830.00	1.390
Hexachlorobenzene	100	428856.000	0.3579	120	534539.000	0.3442
Hexachloroethane	100	232926.000	0.6540	120	285622.000	0.6136
Indeno[1,2,3-cd]pyrene	100	1951571.00	1.292	120	2313554.00	1.203
Isophorone	100	980798.000	0.7092	120	1196573.00	0.6644
Naphthalene	100	1337832.00	0.9674	120	1599254.00	0.8879
Nitrobenzene	100	531536.000	0.3844	120	643009.000	0.3570
Phenanthrene	100	1541746.00	1.287	120	1853282.00	1.194
Pyrene	100	1784996.00	1.176	120	2106212.00	1.069
bis(2-Chloroethoxy)methane	100	692390.000	0.5007	120	822124.000	0.4565
bis(2-Chloroethyl)ether	100	388723.000	1.092	120	467911.000	1.005
bis(2-Chloroisopropyl)ether	100	773341.000	2.171	NA	NA	NA
bis(2-Ethylhexyl)phthalate	100	1189446.00	0.7836	120	1406629.00	0.7137

INT_CAL - Modified 03/06/2008
PDF File ID: 1460731
Report generated 08/07/2009 11:10

Login Number: L09080106 Run Date: 05/26/2009 Sample ID: WG303119-10
Instrument ID: HPMS5 Run Time: 14:12 Method: 8270C
File ID: 5M54855 Analyst: CAA QC Key: STD
ICal Workgroup: WG303119 Cal ID: HPMS5 - 26-MAY-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,4-Dichlorobenzene	CCC	50000	49100	ug/L	1.58	1.70	30	
2,4,6-Trichlorophenol	CCC	50000	51200	ug/L	0.447	2.30	30	
2,4-Dichlorophenol	CCC	50000	48900	ug/L	0.307	2.20	30	
2-Nitrophenol	CCC	50000	48600	ug/L	0.195	2.80	30	
4-Chloro-3-Methylphenol	CCC	50000	49700	ug/L	0.299	0.600	30	
Acenaphthene	CCC	50000	47300	ug/L	1.17	5.50	30	
Benzo[a]pyrene	CCC	50000	52300	ug/L	1.18	4.60	30	
Di-n-Octyl Phthalate	CCC	50000	45100	ug/L	1.22	9.70	30	
Fluoranthene	CCC	50000	49400	ug/L	1.39	1.10	30	
Hexachlorobutadiene	CCC	50000	55200	ug/L	0.249	10.4	30	
n-Nitrosodiphenylamine	CCC	50000	47300	ug/L	0.724	5.50	30	
Pentachlorophenol	CCC	50000	65700	ug/L	0.255	31.4	30	*
Phenol	CCC	50000	50300	ug/L	1.66	0.600	30	
2,4-Dinitrophenol	SPCC	50000	59900	ug/L	0.220	19.8	30	
4-Nitrophenol	SPCC	50000	45600	ug/L	0.267	8.90	30	
Hexachlorocyclopentadiene	SPCC	50000	57000	ug/L	0.368	14.1	30	
n-Nitrosodipropylamine	SPCC	50000	52600	ug/L	0.948	5.20	30	
1,2,4-Trichlorobenzene		50000	50300	ug/L	0.348	0.600	30	
1,2-Dichlorobenzene		50000	51700	ug/L	1.54	3.30	30	
1,3-Dichlorobenzene		50000	50000	ug/L	1.56	0	30	
2,4,5-Trichlorophenol		50000	52500	ug/L	0.481	5.10	30	
2,4-Dimethylphenol		50000	45900	ug/L	0.284	8.30	30	
2,4-Dinitrotoluene		50000	48100	ug/L	0.462	3.80	30	
2,6-Dinitrotoluene		50000	50200	ug/L	0.365	0.400	30	
2-Chloronaphthalene		50000	41600	ug/L	1.24	16.7	30	
2-Chlorophenol		50000	49900	ug/L	1.37	0.200	30	
2-Methylnaphthalene		50000	52000	ug/L	0.688	4.10	30	
2-Methylphenol		50000	51100	ug/L	1.11	2.30	30	
2-Nitroaniline		50000	52600	ug/L	0.389	5.20	30	
3-,4-Methylphenol		50000	49400	ug/L	1.39	1.10	30	
3-Nitroaniline		50000	54800	ug/L	0.397	9.60	30	
4,6-Dinitro-2-Methylphenol		50000	61300	ug/L	0.193	22.6	30	
4-Bromophenyl Phenyl Ether		50000	43500	ug/L	0.253	13.0	30	
4-Chloroaniline		50000	50300	ug/L	0.437	0.500	30	
4-Chlorophenyl Phenyl Ether		50000	47700	ug/L	0.689	4.70	30	
4-Nitroaniline		50000	55300	ug/L	0.410	10.7	30	
Acenaphthylene		50000	47700	ug/L	1.88	4.60	30	
Anthracene		50000	48200	ug/L	1.26	3.60	30	
Benzo[a]anthracene		50000	49900	ug/L	1.27	0.100	30	
Benzo[b]fluoranthene		50000	47900	ug/L	1.31	4.10	30	
Benzo[ghi]perylene		50000	52200	ug/L	1.02	4.50	30	
Benzo[k]fluoranthene		50000	41800	ug/L	0.883	16.4	30	

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Report generated 08/07/2009 11:10

Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00082622

Login Number: L09080106 Run Date: 05/26/2009 Sample ID: WG303119-10
Instrument ID: HPMS5 Run Time: 14:12 Method: 8270C
File ID: 5M54855 Analyst: CAA QC Key: STD
ICal Workgroup: WG303119 Cal ID: HPMS5 - 26-MAY-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Benzyl Alcohol		50000	52600	ug/L	0.951	5.20	30	
bis(2-Chloroethoxy)methane		50000	37900	ug/L	0.409	24.2	30	
bis(2-Chloroethyl)ether		50000	47400	ug/L	1.06	5.20	30	
bis(2-Chloroisopropyl)ether		50000	43500	ug/L	2.06	12.9	30	
bis(2-Ethylhexyl)phthalate		50000	44000	ug/L	0.729	12.0	30	
Butyl Benzyl Phthalate		50000	42000	ug/L	0.434	16.0	30	
Chrysene		50000	49300	ug/L	1.16	1.40	30	
Di-n-Butyl Phthalate		50000	42000	ug/L	1.28	16.1	30	
Dibenz[ah]anthracene		50000	53800	ug/L	1.14	7.60	30	
Dibenzofuran		50000	45500	ug/L	1.59	9.00	30	
Diethylphthalate		50000	44400	ug/L	1.30	11.2	30	
Dimethylphthalate		50000	45200	ug/L	1.36	9.50	30	
Fluorene		50000	48900	ug/L	1.48	2.30	30	
Hexachlorobenzene		50000	55200	ug/L	0.354	10.5	30	
Hexachloroethane		50000	50000	ug/L	0.633	0.100	30	
Indeno[1,2,3-cd]pyrene		50000	52500	ug/L	1.32	5.10	30	
Isophorone		50000	48400	ug/L	0.697	3.30	30	
Naphthalene		50000	48300	ug/L	0.974	3.40	30	
Nitrobenzene		50000	49100	ug/L	0.379	1.90	30	
Phenanthrene		50000	47300	ug/L	1.23	5.30	30	
Pyrene		50000	47000	ug/L	1.15	5.90	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

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Version 1.5 PDF File ID: 1460732
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Microbac Laboratories Inc.
ALTERNATE SOURCE CALIBRATION REPORT

00082623

Login Number: L09080106 Run Date: 05/26/2009 Sample ID: WG303119-11
Instrument ID: HPMS5 Run Time: 14:47 Method: 8270C
File ID: 5M54856 Analyst: CAA QC Key: STD
ICal Workgroup: WG303119 Cal ID: HPMS5 - 26-MAY-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
3,3'-Dichlorobenzidine		50000	50600	ug/L	0.447	1.10	30	
Benzoic Acid		50000	64900	ug/L	0.205	29.7	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

ALT - Modified 09/06/2007
Version 1.5 PDF File ID: 1460732
Report generated 08/07/2009 11:10

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082624

Login Number: L09080106 Run Date: 08/06/2009 Sample ID: WG309159-02
Instrument ID: HPMS5 Run Time: 13:28 Method: 8270C
File ID: 5M55545 Analyst: CAA QC Key: STD
Workgroup (AAB#): WG309160 Cal ID: HPMS5 - 26-MAY-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,4-Dichlorobenzene	CCC	50000	48200	ug/L	1.55	3.59	20	
2,4,6-Trichlorophenol	CCC	50000	49200	ug/L	0.430	1.55	20	
2,4-Dichlorophenol	CCC	50000	48500	ug/L	0.305	2.97	20	
2-Nitrophenol	CCC	50000	46500	ug/L	0.187	6.97	40	
4-Chloro-3-Methylphenol	CCC	50000	47300	ug/L	0.285	5.40	20	
Acenaphthene	CCC	50000	50300	ug/L	1.24	0.693	20	
Benzo[a]pyrene	CCC	50000	49000	ug/L	1.11	1.96	20	
Di-n-Octyl Phthalate	CCC	50000	48200	ug/L	1.31	3.56	20	
Fluoranthene	CCC	50000	51500	ug/L	1.45	2.91	20	
Hexachlorobutadiene	CCC	50000	55400	ug/L	0.250	10.8	20	
n-Nitrosodiphenylamine	CCC	50000	47200	ug/L	0.723	5.63	20	
Pentachlorophenol	CCC	50000	46800	ug/L	0.174	6.39	20	
Phenol	CCC	50000	44300	ug/L	1.47	11.4	20	
2,4-Dinitrophenol	SPCC	50000	51400	ug/L	0.182	2.76	20	
4-Nitrophenol	SPCC	50000	41600	ug/L	0.243	16.9	40	
Hexachlorocyclopentadiene	SPCC	50000	60000	ug/L	0.387	20.0	40	
n-Nitrosodipropylamine	SPCC	50000	44200	ug/L	0.797	11.6	40	
1,2,4-Trichlorobenzene		50000	48500	ug/L	0.335	3.07	40	
1,2-Dichlorobenzene		50000	48800	ug/L	1.45	2.44	40	
1,3-Dichlorobenzene		50000	48900	ug/L	1.53	2.28	40	
2,4,5-Trichlorophenol		50000	49600	ug/L	0.455	0.724	40	
2,4-Dimethylphenol		50000	44200	ug/L	0.274	11.7	40	
2,4-Dinitrotoluene		50000	50500	ug/L	0.485	1.01	40	
2,6-Dinitrotoluene		50000	46900	ug/L	0.341	6.15	40	
2-Chloronaphthalene		50000	48200	ug/L	1.44	3.58	40	
2-Chlorophenol		50000	46600	ug/L	1.28	6.77	40	
2-Methylnaphthalene		50000	47600	ug/L	0.629	4.87	40	
2-Methylphenol		50000	44900	ug/L	0.976	10.2	40	
2-Nitroaniline		50000	49600	ug/L	0.367	0.834	40	
3,3'-Dichlorobenzidine		50000	43200	ug/L	0.382	13.5	40	
3-,4-Methylphenol		50000	42400	ug/L	1.19	15.3	40	
3-Nitroaniline		50000	45900	ug/L	0.333	8.22	40	
4,6-Dinitro-2-Methylphenol		50000	51200	ug/L	0.162	2.46	40	
4-Bromophenyl Phenyl Ether		50000	48300	ug/L	0.282	3.30	40	
4-Chloroaniline		50000	46000	ug/L	0.400	7.99	40	
4-Chlorophenyl Phenyl Ether		50000	54700	ug/L	0.791	9.44	40	
4-Nitroaniline		50000	42300	ug/L	0.313	15.4	40	
Acenaphthylene		50000	47500	ug/L	1.87	4.97	40	
Anthracene		50000	48400	ug/L	1.26	3.13	40	
Benzo[a]anthracene		50000	44200	ug/L	1.12	11.6	40	
Benzo[b]fluoranthene		50000	50400	ug/L	1.38	0.708	40	
Benzo[ghi]perylene		50000	51200	ug/L	1.00	2.34	40	

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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082625

Login Number: L09080106 Run Date: 08/06/2009 Sample ID: WG309159-02
Instrument ID: HPMS5 Run Time: 13:28 Method: 8270C
File ID: 5M55545 Analyst: CAA QC Key: STD
Workgroup (AAB#): WG309160 Cal ID: HPMS5 - 26-MAY-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Benzo[k]fluoranthene		50000	44200	ug/L	0.933	11.7	40	
Benzoic Acid		50000	38200	ug/L	0.0885	23.6	40	
Benzyl Alcohol		50000	44300	ug/L	0.801	11.4	40	
bis(2-Chloroethoxy)methane		50000	44100	ug/L	0.477	11.8	40	
bis(2-Chloroethyl)ether		50000	46900	ug/L	1.04	6.22	40	
bis(2-Chloroisopropyl)ether		50000	47100	ug/L	2.22	5.84	40	
bis(2-Ethylhexyl)phthalate		50000	45100	ug/L	0.747	9.81	40	
Butyl Benzyl Phthalate		50000	64000	ug/L	0.620	28.0	40	
Chrysene		50000	45000	ug/L	1.06	9.99	40	
Di-n-Butyl Phthalate		50000	50600	ug/L	1.55	1.20	40	
Dibenz[ah]anthracene		50000	50500	ug/L	1.07	0.969	40	
Dibenzofuran		50000	49000	ug/L	1.71	2.06	40	
Diethylphthalate		50000	51700	ug/L	1.52	3.30	40	
Dimethylphthalate		50000	49700	ug/L	1.49	0.534	40	
Fluorene		50000	49100	ug/L	1.49	1.75	40	
Hexachlorobenzene		50000	51200	ug/L	0.328	2.31	40	
Hexachloroethane		50000	53200	ug/L	0.674	6.31	40	
Indeno[1,2,3-cd]pyrene		50000	50600	ug/L	1.28	1.14	40	
Isophorone		50000	45800	ug/L	0.660	8.34	40	
Naphthalene		50000	46900	ug/L	0.946	6.14	40	
Nitrobenzene		50000	48000	ug/L	0.371	3.96	40	
Phenanthrene		50000	48000	ug/L	1.25	3.91	40	
Pyrene		50000	44600	ug/L	1.09	10.9	20	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1460734
Report generated 08/07/2009 11:11

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00082626

Login Number: L09080106
Instrument ID: HPMS5
Workgroup (AAB#): WG309160

CCV Number: WG309159-02
CAL ID: HPMS5-26-MAY-09
Matrix: SOLID

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG309159-02	NA	NA	167424	359900	879732	647507	838360	611299
Upper Limit	NA	NA	334848	719800	1759464	1295014	1676720	1222598
Lower Limit	NA	NA	83712	179950	439866	323754	419180	305650
L09080106-03	1.00	01	153167	321056	785838	586703	747887	549445
WG309032-01	1.00	01	151805	315751	751583	580983	727276	541345
WG309032-02	1.00	01	152425	322392	821702	626180	787645	565891
WG309032-03	1.00	01	154587	330130	833903	634851	793207	570031

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-D8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1460735
Report generated 08/07/2009 11:11

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

00082627

Login Number:L09080106 CCV Number:WG309159-02
Instrument ID:HPMS5 CAL ID: HPMS5-26-MAY-09
Workgroup (AAB#):WG309160 Matrix:SOLID

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3	IS-4	IS-5	IS-6
WG309159-02	NA	NA	9	12.72	17.12	10.6	19.35	14.33
Upper Limit	NA	NA	9.5	13.22	17.62	11.1	19.85	14.83
Lower Limit	NA	NA	8.5	12.22	16.62	10.1	18.85	13.83
L09080106-03	1.00	01	9	12.72	17.12	10.6	19.35	14.32
WG309032-01	1.00	01	9	12.72	17.12	10.6	19.34	14.32
WG309032-02	1.00	01	9	12.73	17.13	10.6	19.35	14.33
WG309032-03	1.00	01	9	12.73	17.12	10.6	19.35	14.33

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Acenaphthene-d10
IS-3 - Chrysene-d12
IS-4 - Naphthalene-D8
IS-5 - Perylene-d12
IS-6 - Phenanthrene-d10

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1460736
Report generated 08/07/2009 11:11

2.3 Metals Data

2.3.1 Metals I C P Data

2.3.1.1 Summary Data

LABORATORY REPORT

00082631

L09080106

08/11/09 16:16

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRCL01	L09080106-03	6010B	2	06-AUG-09
PRCL01	L09080106-03	6010B	1	06-AUG-09

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082632

Sample Number:	L09080106-03	PrePrep Method:	NONE	Instrument:	ICP-THERMO2
Client ID:	PRCL01	Prep Method:	3051	Prep Date:	08/07/2009 06:56
Matrix:	Soil	Analytical Method:	6010B	Cal Date:	08/07/2009 10:39
Workgroup Number:	WG309237	Analyst:	EDA	Run Date:	08/07/2009 13:26
Collect Date:	08/05/2009 13:30	Dilution:	2	File ID:	T2.080709.132641
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	81.8

Analyte	CAS. Number	Result	Qual	PQL	SDL
Cadmium, Total	7440-43-9		U	0.935	0.0935

U Not detected at or above adjusted sample detection limit

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082633

Sample Number: **L09080106-03**
Client ID: **PRCL01**
Matrix: **Soil**
Workgroup Number: **WG309237**
Collect Date: **08/05/2009 13:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **3051**
Analytical Method: **6010B**
Analyst: **EDA**
Dilution: **1**
Units: **mg/kg**

Instrument: **ICP-THERMO2**
Prep Date: **08/07/2009 06:56**
Cal Date: **08/07/2009 10:39**
Run Date: **08/07/2009 11:55**
File ID: **T2.080709.115528**
Percent Solid: **81.8**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Aluminum, Total	7429-90-5	3190		18.7	9.35
Silver, Total	7440-22-4	0.398	J	1.87	0.234
Barium, Total	7440-39-3	7.78		0.467	0.0935
Beryllium, Total	7440-41-7	0.0911	J	0.467	0.0112
Calcium, Total	7440-70-2	34.5		9.35	4.67
Cobalt, Total	7440-48-4	0.669	J	0.935	0.112
Chromium, Total	7440-47-3	13.4		0.935	0.112
Copper, Total	7440-50-8	1.23		0.935	0.467
Iron, Total	7439-89-6	17200		2.80	0.935
Potassium, Total	7440-09-7	188		46.7	23.4
Magnesium, Total	7439-95-4	96.5		23.4	11.2
Manganese, Total	7439-96-5	10.1		0.467	0.0935
Sodium, Total	7440-23-5	5.21	J	23.4	4.67
Nickel, Total	7440-02-0	1.70	J	1.87	0.467
Antimony, Total	7440-36-0		U	0.935	0.467
Vanadium, Total	7440-62-2	43.1		0.467	0.234
Zinc, Total	7440-66-6	12.5		0.935	0.467

J The analyte was positively identified, but the quantitation was below the RL
U Not detected at or above adjusted sample detection limit

2.3.1.2 QC Summary Data

Example 6010 Calculations
Perkin Elmer Optima 4300 DV

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Example 6010 Calculations
Thermo Scientific IRIS Advantage

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Example 6010 Calculations
Thermo Scientific iCAP 6500

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and four standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Microbac Laboratories Inc.
Microwave Digestion Log

00082638

Workgroup: WG309187
Analyst: REK
Spike Analyst: REK
Run Date: 08/07/2009 06:56
Method: 3051

SOP: ME406 Revison 11
Spike Solution: STD34341
Spike Witness: VC
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013
HCL Lot #: COA14028

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG309187-02	BLANK	7	1 g	50 mL	175.955 g	175.835 g		
2	WG309187-03	LCS	7	1 g	50 mL	181.175 g	181.161 g	5 mL	
3	WG309187-01	REF	7	1.308 g	50 mL	177.373 g	177.344 g		
4	L09080106-03	SAMP	7	1.308 g	50 mL	177.373 g	177.344 g		08/07/09
5	WG309187-04	MS	7	1.308 g	50 mL	182.464 g	182.442 g	5 mL	
6	WG309187-05	MSD	7	1.308 g	50 mL	185.197 g	185.097 g	5 mL	

Analyst: 

Reviewer: 

MW_DIG - Modified 07/02/2008
PDF ID: 1460062
Report generated: 08/07/2009 07:31

Microbac®

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO2 Dataset: 080709T2.1
Analyst1: EDA Analyst2: N/A
Method: 6010B SOP: ME600G Rev: 0
Maintenance Log ID: 29712

Calibration Std: STD34350 ICV/CCV Std: STD34472 Post Spike: STD27612
ICSA: STD34482 ICSAB: STD34386 Int. Std: STD34468

Workgroups: 309237, 308905, 309131, 309242

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	T2.080709.101341	WG309254-01	Calibration Point		1		08/07/09 10:13
2	T2.080709.102005	WG309254-02	Calibration Point		1		08/07/09 10:20
3	T2.080709.102632	WG309254-03	Calibration Point		1		08/07/09 10:26
4	T2.080709.103259	WG309254-04	Calibration Point		1		08/07/09 10:32
5	T2.080709.103913	WG309254-05	Calibration Point		1		08/07/09 10:39
6	T2.080709.104525	WG309254-06	Initial Calibration Verification		1		08/07/09 10:45
7	T2.080709.105142	WG309254-07	Initial Calib Blank		1		08/07/09 10:51
8	T2.080709.105809	WG309254-08	Interference Check		1		08/07/09 10:58
9	T2.080709.110432	WG309254-09	Interference Check		1		08/07/09 11:04
10	T2.080709.111051	WG309254-10	CCV		1		08/07/09 11:10
11	T2.080709.111706	WG309254-11	CCB		1		08/07/09 11:17
12	T2.080709.112334	LC-SS	LCSS SPIKE CHECK		100		08/07/09 11:23
13	T2.080709.113001	WG309254-12	CCV		1		08/07/09 11:30
14	T2.080709.113617	WG309254-13	CCB		1		08/07/09 11:36
15	T2.080709.114245	WG309187-02	Method/Prep Blank	1/50	1		08/07/09 11:42
16	T2.080709.114911	WG309187-03	Laboratory Control S	1/50	1		08/07/09 11:49
17	T2.080709.115528	L09080106-03	PRCL01	1.308/50	1		08/07/09 11:55
18	T2.080709.120148	WG309237-01	Post Digestion Spike		1	L09080106-03	08/07/09 12:01
19	T2.080709.120801	WG309237-02	Serial Dilution		5	L09080106-03	08/07/09 12:08
20	T2.080709.121426	WG309237-02	Serial Dilution		25	L09080106-03	08/07/09 12:14
21	T2.080709.122052	WG309187-04	Matrix Spike	1.308/50	1	L09080106-03	08/07/09 12:20
22	T2.080709.122710	WG309187-05	Matrix Spike Duplica	1.308/50	1	L09080106-03	08/07/09 12:27
23	T2.080709.123328	WG309254-14	CCV		1		08/07/09 12:33
24	T2.080709.123943	WG309254-15	CCB		1		08/07/09 12:39
25	T2.080709.124610	L09080003-01	MDL-1	1/50	1		08/07/09 12:46
26	T2.080709.125237	L09080004-01	MDL-1	1/50	1		08/07/09 12:52
27	T2.080709.125925	WG309237-01	Post Digestion Spike		1	L09080106-03	08/07/09 12:59
28	T2.080709.130539	WG309254-16	CCV		1		08/07/09 13:05
29	T2.080709.131154	WG309254-17	CCB		1		08/07/09 13:11
30	T2.080709.131822	L09080082-01	FTMD02-CF-TS01S	1.357/50	1		08/07/09 13:18
31	T2.080709.132641	L09080106-03	PRCL01	1.308/50	2	WG309187-01	08/07/09 13:26
32	T2.080709.133258	WG309237-01	Post Digestion Spike		2	L09080106-03	08/07/09 13:32
33	T2.080709.133912	WG309131-01	Post Digestion Spike		1	L09080082-01	08/07/09 13:39
34	T2.080709.134525	WG309254-18	CCV		1		08/07/09 13:45
35	T2.080709.135139	WG309254-19	CCB		1		08/07/09 13:51
36	T2.080709.135807	WG309207-02	Method/Prep Blank	1/50	1		08/07/09 13:58
37	T2.080709.140434	WG309207-03	Laboratory Control S	1/50	1		08/07/09 14:04

Page: 1 Approved: August 10, 2009

Kym H. Rhoden

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO2 Dataset: 080709T2.1
Analyst1: EDA Analyst2: N/A
Method: 6010B SOP: ME600G Rev: 0
Maintenance Log ID: 29712

Calibration Std: STD34350 ICV/CCV Std: STD34472 Post Spike: STD27612
ICSA: STD34482 ICSAB: STD34386 Int. Std: STD34468

Workgroups: 309237, 308905, 309131, 309242

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	T2.080709.141059	WG309207-01	Reference Sample		5	L09080103-01	08/07/09 14:10
39	T2.080709.141646	WG309187-04	Matrix Spike	1.308/50	2	L09080106-03	08/07/09 14:16
40	T2.080709.142302	WG309187-05	Matrix Spike Duplica	1.308/50	2	L09080106-03	08/07/09 14:23
41	T2.080709.142920	WG309254-20	CCV		1		08/07/09 14:29
42	T2.080709.143536	WG309254-21	CCB		1		08/07/09 14:35
43	T2.080709.144206	WG309207-04	Matrix Spike	1.313/50	5	L09080103-01	08/07/09 14:42
44	T2.080709.144825	WG309207-05	Matrix Spike Duplica	1.313/50	5	L09080103-01	08/07/09 14:48
45	T2.080709.145444	L09080103-04	13077-C0008	1.376/50	5		08/07/09 14:54
46	T2.080709.150104	WG309242-01	Post Digestion Spike		5	L09080103-04	08/07/09 15:01
47	T2.080709.150720	WG309242-02	Serial Dilution		25	L09080103-04	08/07/09 15:07
48	T2.080709.151343	WG309254-22	CCV		1		08/07/09 15:13
49	T2.080709.151959	WG309254-23	CCB		1		08/07/09 15:19
50	T2.080709.152629	WG309242-02	Serial Dilution		125	L09080103-04	08/07/09 15:26
51	T2.080709.153254	L09080103-05	13077-C0009	1.378/50	5		08/07/09 15:32
52	T2.080709.153910	L09080103-06	13121-C0003	1.477/50	5		08/07/09 15:39
53	T2.080709.154537	L09080103-07	13353-C0007	1.363/50	5		08/07/09 15:45
54	T2.080709.155207	L09080103-08	13353-C0009	1.375/50	5		08/07/09 15:52
55	T2.080709.155824	L09080103-09	13353-C0011	1.326/50	5		08/07/09 15:58
56	T2.080709.160451	L09080103-10	13364-C0006	1.392/50	5		08/07/09 16:04
57	T2.080709.161109	L09080103-11	13364-C0008	1.335/50	5		08/07/09 16:11
58	T2.080709.161728	L09080103-12	13368-C0005	1.49/50	5		08/07/09 16:17
59	T2.080709.162348	L09080103-13	13368-C0007	1.435/50	5		08/07/09 16:23
60	T2.080709.163007	WG309254-24	CCV		1		08/07/09 16:30
61	T2.080709.163624	WG309254-25	CCB		1		08/07/09 16:36
62	T2.080709.164253	L09080103-14	13370-C0004	1.381/50	5		08/07/09 16:42
63	T2.080709.164921	L09080103-15	13370-C0006	1.425/50	5		08/07/09 16:49
64	T2.080709.165550	WG309254-26	CCV		1		08/07/09 16:55
65	T2.080709.170206	WG309254-27	CCB		1		08/07/09 17:02

Page: 2 Approved: August 10, 2009

Microbac

Microbac Laboratories Inc.

Data Checklist

Date: 07-AUG-2009
Analyst: EDA
Analyst: NA
Method: 6010B
Instrument: ICP-THERMO2
Curve Workgroup: 309254
Runlog ID: 29518
Analytical Workgroups: 309237, 308905, 309131, 309242

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	X
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	
Case Narrative	106, 082, 103
Client Forms	X
Level X	
Level 3	
Level 4	106, 082, 103
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	EDA
Secondary Reviewer	KHR
Comments	

Primary Reviewer:

Secondary Reviewer:
10-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-10-2009 12:54:36

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00082642

Analytical Method: 6010B AAB#: WG309237

Login Number: L09080106

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRCL01	03	08/05/09					08/07/09	1.7	180		08/07/09	2	180	
PRCL01	03	08/05/09					08/07/09	1.7	180		08/07/09	1.9	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1461040
Report generated 08/07/2009 14:41

METHOD BLANK SUMMARY

Login Number:	L09080106	Work Group:	WG309237
Blank File ID:	T2.080709.114245	Blank Sample ID:	WG309187-02
Prep Date:	08/07/09 06:56	Instrument ID:	ICP-THERMO2
Analyzed Date:	08/07/09 11:42	Method:	6010B
Analyst:	EDA		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309187-03	T2.080709.114911	08/07/09 11:49	01
PRCL01	L09080106-03	T2.080709.115528	08/07/09 11:55	02
PRCL01	L09080106-03	T2.080709.132641	08/07/09 13:26	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1461041
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.

METHOD BLANK REPORT

00082644

Login Number:L09080106 Prep Date:08/07/09 06:56 Sample ID:WG309187-02
Instrument ID:ICP-THERMO2 Run Date:08/07/09 11:42 Prep Method:3051
File ID:T2.080709.114245 Analyst:EDA Method:6010B
Workgroup (AAB#):WG309237 Matrix:Soil Units:mg/kg
Contract #:DACA56-94-D-0020 Cal ID:ICP-TH-07-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Aluminum, Total	10.0	20.0	10.0	1	U
Silver, Total	0.250	2.00	0.250	1	U
Barium, Total	0.100	0.500	0.100	1	U
Beryllium, Total	0.0120	0.500	0.0120	1	U
Calcium, Total	5.00	10.0	5.00	1	U
Cadmium, Total	0.0500	0.500	0.0500	1	U
Cobalt, Total	0.120	1.00	0.120	1	U
Chromium, Total	0.120	1.00	0.120	1	U
Copper, Total	0.500	1.00	0.500	1	U
Iron, Total	1.00	3.00	1.43	1	J
Potassium, Total	25.0	50.0	25.0	1	U
Magnesium, Total	12.0	25.0	12.0	1	U
Manganese, Total	0.100	0.500	0.100	1	U
Sodium, Total	5.00	25.0	5.00	1	U
Nickel, Total	0.500	2.00	0.500	1	U
Antimony, Total	0.500	1.00	0.500	1	U
Vanadium, Total	0.250	0.500	0.250	1	U
Zinc, Total	0.500	1.00	0.500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1461042
07-AUG-2009 14:41

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00082645

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309187-03
Instrument ID: ICP-THERMO2 Run Time: 11:49 Prep Method: 3051
File ID: T2.080709.114911 Analyst: EDA Method: 6010B
Workgroup (AAB#): WG309237 Matrix: Soil Units: mg/kg
QC Key: STD Lot#: STD34341 Cal ID: ICP-TH-07-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Aluminum, Total	250	221	88.2	80 - 120	
Silver, Total	10.0	9.08	90.8	80 - 120	
Barium, Total	25.0	25.1	100	80 - 120	
Beryllium, Total	1.25	1.12	89.6	80 - 120	
Calcium, Total	250	238	95.4	80 - 120	
Cadmium, Total	1.25	1.18	94.8	80 - 120	
Cobalt, Total	5.00	4.94	98.8	80 - 120	
Chromium, Total	12.5	12.2	97.6	80 - 120	
Copper, Total	12.5	12.0	95.8	80 - 120	
Iron, Total	100	99.0	99.0	80 - 120	
Potassium, Total	1250	1180	94.3	80 - 120	
Magnesium, Total	250	224	89.7	80 - 120	
Manganese, Total	12.5	12.0	96.2	80 - 120	
Sodium, Total	1250	1190	95.0	80 - 120	
Nickel, Total	12.5	12.2	97.7	80 - 120	
Antimony, Total	30.0	28.7	95.7	80 - 120	
Vanadium, Total	25.0	24.6	98.6	80 - 120	
Zinc, Total	25.0	22.8	91.2	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1461043
Report generated: 08/07/2009 14:41

Loginnum:L09080106 Cal ID: ICP-THERMO- Worknum:WG309237
Instrument ID:ICP-THERMO Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG309187-01 File ID:T2.080709.115528 Dil:1 Matrix:SOLID
Sample ID:WG309187-04 MS File ID:T2.080709.122052 Dil:1 Units:mg/kg
Sample ID:WG309187-05 MSD File ID:T2.080709.122710 Dil:1 Percent Solid:81.8

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Aluminum, Total	3190	234	6060	1230	234	9840	2840	47.4	80 - 120	20	*#
Antimony, Total	ND	28.0	26.2	93.3	28.0	26.0	92.6	0.744	80 - 120	20	
Barium, Total	7.78	23.4	34.3	113	23.4	38.0	129	10.3	80 - 120	20	*
Beryllium, Total	0.0911	1.17	1.12	88.4	1.17	1.19	93.6	5.30	80 - 120	20	
Calcium, Total	34.5	234	257	95.0	234	264	98.2	2.91	80 - 120	20	
Chromium, Total	13.4	11.7	24.5	94.6	11.7	27.2	118	10.6	80 - 120	20	
Cobalt, Total	0.669	4.67	5.27	98.5	4.67	5.43	102	2.94	80 - 120	20	
Copper, Total	1.23	11.7	12.0	92.1	11.7	12.4	95.6	3.34	80 - 120	20	
Iron, Total	17200	93.5	16100	-1130	93.5	16600	-664	2.65	80 - 120	20	*
Magnesium, Total	96.5	234	381	122	234	481	164	23.2	80 - 120	20	*#
Manganese, Total	10.1	11.7	20.8	91.9	11.7	22.9	110	9.52	80 - 120	20	
Nickel, Total	1.70	11.7	13.5	101	11.7	14.6	110	7.88	80 - 120	20	
Potassium, Total	188	1170	1430	106	1170	1620	122	12.5	80 - 120	20	*
Silver, Total	0.398	9.35	8.99	91.9	9.35	9.18	94.0	2.10	80 - 120	20	
Sodium, Total	5.21	1170	1120	95.6	1170	1140	97.2	1.69	80 - 120	20	
Vanadium, Total	43.1	23.4	58.8	66.9	23.4	61.5	78.4	4.49	80 - 120	20	*
Zinc, Total	12.5	23.4	32.9	87.2	23.4	34.9	95.8	5.94	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID:1461044
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.
MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00082647

Loginnum:L09080106 Cal ID: ICP-THERMO- Worknum:WG309237
Instrument ID:ICP-THERMO Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG309187-01 File ID:T2.080709.132641 Dil:2 Matrix:SOLID
Sample ID:WG309187-04 MS File ID:T2.080709.141646 Dil:2 Units:mg/kg
Sample ID:WG309187-05 MSD File ID:T2.080709.142302 Dil:2 Percent Solid:81.8

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Cadmium, Total	ND	1.17	0.786	67.3	1.17	0.777	66.5	1.20	80 - 120	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID:1461044
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.
Serial Dilution Report

Login: L09080106 **Worknum:** WG309237
Instrument: ICP-THERMO2 **Method:** 6010B
Serial Dil: WG309237-02 **File ID:** T2.080709.120801 **Dil:** 5 **Units:** mg/L
Sample: L09080106-03 **File ID:** T2.080709.115528 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Aluminum	68.3		70.5		3.22	
Antimony	ND	U	ND	U		
Barium	.166		.158		4.82	
Beryllium	.00195	F	.0022	F	12.80	
Cadmium	ND	U	ND	U		
Calcium	.738	X	.59	F	20.10	
Chromium	.287		.2895		0.87	
Cobalt	.0143	F	.01415	F	1.05	
Copper	.0263	X	ND	U		
Iron	368		364		1.09	
Magnesium	2.06	X	2.275	F	10.40	
Manganese	.215		.2155		0.23	
Nickel	.0363	F	ND	U		
Potassium	4.03	X	4.145	F	2.85	
Silver	.00852	F	ND	U		
Sodium	.111	F	ND	U		
Vanadium	.923		.915		0.87	
Zinc	.268	X	.2705	X	0.93	

U = Result is below MDL.
F = Result is greater than or equal to MDL and less than the RL.
X = Result is greater than or equal to RL and less than 50 times the MDL.
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 50 times the MDL.

SERIAL_DIL - Modified 09/22/2008
PDF File ID: 1461038
08/07/2009 14:41

Sample Login ID: L09080106 **Worknum:** WG309237
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG309237-01 **File ID:** T2.080709.125925 **Dil:** 1 **Units:** mg/L
Sample ID: L09080106-03 **File ID:** T2.080709.115528 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	66.4		68.3		5	98.0	75 - 125	
ANTIMONY	0.561		0	U	.6	93.5	75 - 125	
BARIUM	0.639		0.166		.5	97.9	75 - 125	
BERYLLIUM	0.0239		0.00195	F	.025	88.5	75 - 125	
CADMIUM	0.0176		0	U	.025	70.4	75 - 125	N
CALCIUM	5.35		0.738		5	93.8	75 - 125	
CHROMIUM	0.493		0.287		.25	93.9	75 - 125	
COBALT	0.110		0.0143	F	.1	97.6	75 - 125	
COPPER	0.259		0.0263		.25	94.1	75 - 125	
IRON	332		368		2	37.0	75 - 125	N
MAGNESIUM	6.27		2.06		5	88.3	75 - 125	
MANGANESE	0.423		0.215		.25	91.9	75 - 125	
NICKEL	0.269		0.0363	F	.25	94.5	75 - 125	
POTASSIUM	26.9		4.03		25	93.1	75 - 125	
SILVER	0.188		0.00852	F	.2	89.9	75 - 125	
SODIUM	23.6		0.111	F	25	94.0	75 - 125	
VANADIUM	1.29		0.923		.5	91.5	75 - 125	
ZINC	0.685		0.268		.5	88.9	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1461039
Report generated: 08/07/2009 14:41

Sample Login ID: L09080106 **Worknum:** WG309237
Instrument ID: ICP-THERMO2 **Method:** 6010B
Post Spike ID: WG309237-01 **File ID:** T2.080709.133258 **Dil:** 2 **Units:** mg/L
Sample ID: L09080106-03 **File ID:** T2.080709.132641 **Dil:** 2 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ALUMINUM	40.1		35.4		5	93.3	75 - 125	
ANTIMONY	0.556		0	U	.6	92.6	75 - 125	
BARIUM	0.569		0.0818		.5	97.4	75 - 125	
BERYLLIUM	0.0239		0.00105	F	.025	91.4	75 - 125	
CADMIUM	0.0199		0	U	.025	79.6	75 - 125	
CALCIUM	5.15		0.368		5	95.6	75 - 125	
CHROMIUM	0.387		0.147		.25	96.0	75 - 125	
COBALT	0.104		0.00743	F	.1	96.1	75 - 125	
COPPER	0.251		0.0139	F	.25	95.0	75 - 125	
IRON	188		187		2	54.0	75 - 125	N
MAGNESIUM	5.70		1.06		5	92.7	75 - 125	
MANGANESE	0.348		0.110		.25	95.0	75 - 125	
NICKEL	0.254		0.0178	F	.25	94.4	75 - 125	
POTASSIUM	25.8		2.08		25	95.1	75 - 125	
SILVER	0.191		0	U	.2	95.6	75 - 125	
SODIUM	23.8		0	U	25	95.3	75 - 125	
VANADIUM	0.943		0.470		.5	94.6	75 - 125	
ZINC	0.590		0.137		.5	90.8	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1461039
Report generated: 08/07/2009 14:41

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	L09080106	Workgroup (AAB#):	WG309237
Analytical Method:	6010B	Instrument ID:	ICP-THERMO2
ICAL Worknum:	WG309254	Initial Calibration Date:	07-AUG-2009 10:39

	WG309254-01		WG309254-02		WG309254-03		WG309254-04		WG309254-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ALUMINUM	0	0.00603	.1	0.00817	.2	0.0103	5	0.220	10	0.432	.999999	
ANTIMONY	0	-0.0000100	.012	0.000200	.024	0.000370	.6	0.0188	1.2	0.0370	.999966	
BARIUM	0	0.00105	.01	0.00866	.02	0.0164	.5	0.744	1	1.47	.999976	
BERYLLIUM	0	-0.000430	.0005	0.000140	.001	0.000690	.025	0.0542	.05	0.107	.999966	
CADMIUM	0	-0.0000100	.0005	0.0000900	.001	0.000270	.025	0.0123	.05	0.0244	.999858	
CALCIUM	0	-0.000120	.1	0.000780	.2	0.00168	5	0.0861	10	0.171	.99998	
CHROMIUM	0	0.0000400	.005	0.000280	.01	0.000560	.25	0.0266	.5	0.0519	.99994	
COBALT	0	-0.0000400	.002	0.000260	.004	0.000610	.1	0.0331	.2	0.0647	.999922	
COPPER	0	0.000120	-1	0.000430	.01	0.000650	.25	0.0272	.5	0.0527	.999838	
IRON	0	-0.0000200	.04	0.000190	.08	0.000390	2	0.0196	4	0.0386	.999955	
MAGNESIUM	0	0.0000100	.1	0.000130	.2	0.000210	5	0.0101	10	0.0200	.999892	
MANGANESE	0	0.0000300	.005	0.000450	.01	0.000820	.25	0.0365	.5	0.0720	.999906	
NICKEL	0	-0.000150	.005	0.0000300	.01	0.000250	.25	0.0194	.5	0.0377	.999891	
POTASSIUM	0	0.000170	.5	0.00343	1	0.00631	25	0.306	50	0.612	.999993	
SILVER	0	-0.000200	20	0.000360	.008	0.000860	.2	0.0478	.4	0.0933	.999805	
SODIUM	0	-0.000750	.5	0.0133	1	0.0275	25	1.40	50	2.80	.999999	
VANADIUM	0	0.0000400	.01	0.00142	.02	0.00283	.5	0.131	1	0.258	.999943	
ZINC	0	0.000170	.01	0.00119	.02	0.00218	.5	0.0994	1	0.195	.999963	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

INT_CAL_ICP - Modified 03/06/2008
PDF File ID: 1461057
Report generated: 07-AUG-2009 14:41

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-07
Instrument ID: ICP-THERMO2 Run Time: 10:51 Method: 6010B
File ID: T2.080709.105142 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309237 Cal ID: ICP-THERI - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ALUMINUM	.2	.4	.2	U
ANTIMONY	.01	.02	.01	U
BARIUM	.002	.01	.002	U
BERYLLIUM	.00024	.01	.00024	U
CADMIUM	.001	.01	.001	U
CALCIUM	.1	.2	.1	U
CHROMIUM	.0024	.02	.0024	U
COBALT	.0024	.02	.0024	U
COPPER	.01	.02	.01	U
IRON	.02	.06	.02	U
MAGNESIUM	.24	.5	.24	U
MANGANESE	.002	.01	.002	U
NICKEL	.01	.04	.01	U
POTASSIUM	.5	1	.5	U
SILVER	.005	.04	.005	U
SODIUM	.1	.5	.1	U
VANADIUM	.005	.01	.005	U
ZINC	.01	.02	.01	U

ICB - Modified 07/14/2009
PDF File ID: 1461049
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082653

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-11
Instrument ID: ICP-THERMO2 Run Time: 11:17 Method: 6010B
File ID: T2.080709.111706 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Silver	0.00500	0.0400	0.00500	U
Barium	0.00200	0.0100	0.00200	U
Beryllium	0.000240	0.0100	0.000240	U
Calcium	0.100	0.200	0.100	U
Cadmium	0.00100	0.0100	0.00100	U
Cobalt	0.00240	0.0200	0.00240	U
Chromium	0.00240	0.0200	0.00240	U
Copper	0.0100	0.0200	0.0100	U
Iron	0.0200	0.0600	0.0200	U
Potassium	0.500	1.00	0.500	U
Magnesium	0.240	0.500	0.240	U
Manganese	0.00200	0.0100	0.00200	U
Sodium	0.100	0.500	0.100	U
Nickel	0.0100	0.0400	0.0100	U
Antimony	0.0100	0.0200	0.0100	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.0100	0.0200	0.0100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461052
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082654

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-13
Instrument ID: ICP-THERMO2 Run Time: 11:36 Method: 6010B
File ID: T2.080709.113617 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Silver	0.00500	0.0400	0.00500	U
Barium	0.00200	0.0100	0.00200	U
Beryllium	0.000240	0.0100	0.000240	U
Calcium	0.100	0.200	0.100	U
Cadmium	0.00100	0.0100	0.00100	U
Cobalt	0.00240	0.0200	0.00240	U
Chromium	0.00240	0.0200	0.00240	U
Copper	0.0100	0.0200	0.0100	U
Iron	0.0200	0.0600	0.0200	U
Potassium	0.500	1.00	0.500	U
Magnesium	0.240	0.500	0.240	U
Manganese	0.00200	0.0100	0.00200	U
Sodium	0.100	0.500	0.100	U
Nickel	0.0100	0.0400	0.0100	U
Antimony	0.0100	0.0200	0.0100	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.0100	0.0200	0.0100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461052
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082655

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-15
Instrument ID: ICP-THERMO2 Run Time: 12:39 Method: 6010B
File ID: T2.080709.123943 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Silver	0.00500	0.0400	0.00500	U
Barium	0.00200	0.0100	0.00200	U
Beryllium	0.000240	0.0100	0.000240	U
Calcium	0.100	0.200	0.100	U
Cadmium	0.00100	0.0100	0.00100	U
Cobalt	0.00240	0.0200	0.00240	U
Chromium	0.00240	0.0200	0.00240	U
Copper	0.0100	0.0200	0.0100	U
Iron	0.0200	0.0600	0.0200	U
Potassium	0.500	1.00	0.500	U
Magnesium	0.240	0.500	0.240	U
Manganese	0.00200	0.0100	0.00200	U
Sodium	0.100	0.500	0.100	U
Nickel	0.0100	0.0400	0.0100	U
Antimony	0.0100	0.0200	0.0100	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.0100	0.0200	0.0100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461052
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082656

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-17
Instrument ID: ICP-THERMO2 Run Time: 13:11 Method: 6010B
File ID: T2.080709.131154 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Silver	0.00500	0.0400	0.00500	U
Barium	0.00200	0.0100	0.00200	U
Beryllium	0.000240	0.0100	0.000240	U
Calcium	0.100	0.200	0.100	U
Cadmium	0.00100	0.0100	0.00100	U
Cobalt	0.00240	0.0200	0.00240	U
Chromium	0.00240	0.0200	0.00240	U
Copper	0.0100	0.0200	0.0100	U
Iron	0.0200	0.0600	0.0200	U
Potassium	0.500	1.00	0.500	U
Magnesium	0.240	0.500	0.240	U
Manganese	0.00200	0.0100	0.00200	U
Sodium	0.100	0.500	0.100	U
Nickel	0.0100	0.0400	0.0100	U
Antimony	0.0100	0.0200	0.0100	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.0100	0.0200	0.0100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461052
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082657

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-19
Instrument ID: ICP-THERMO2 Run Time: 13:51 Method: 6010B
File ID: T2.080709.135139 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Silver	0.00500	0.0400	0.00500	U
Barium	0.00200	0.0100	0.00200	U
Beryllium	0.000240	0.0100	0.000240	U
Calcium	0.100	0.200	0.100	U
Cadmium	0.00100	0.0100	0.00100	U
Cobalt	0.00240	0.0200	0.00240	U
Chromium	0.00240	0.0200	0.00240	U
Copper	0.0100	0.0200	0.0100	U
Iron	0.0200	0.0600	0.0200	U
Potassium	0.500	1.00	0.500	U
Magnesium	0.240	0.500	0.240	U
Manganese	0.00200	0.0100	0.00200	U
Sodium	0.100	0.500	0.100	U
Nickel	0.0100	0.0400	0.0100	U
Antimony	0.0100	0.0200	0.0100	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.0100	0.0200	0.0100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461052
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082658

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-21
Instrument ID: ICP-THERMO2 Run Time: 14:35 Method: 6010B
File ID: T2.080709.143536 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Aluminum	0.200	0.400	0.200	U
Silver	0.00500	0.0400	0.00500	U
Barium	0.00200	0.0100	0.00200	U
Beryllium	0.000240	0.0100	0.000240	U
Calcium	0.100	0.200	0.100	U
Cadmium	0.00100	0.0100	0.00100	U
Cobalt	0.00240	0.0200	0.00240	U
Chromium	0.00240	0.0200	0.00240	U
Copper	0.0100	0.0200	0.0100	U
Iron	0.0200	0.0600	0.0200	U
Potassium	0.500	1.00	0.500	U
Magnesium	0.240	0.500	0.240	U
Manganese	0.00200	0.0100	0.00200	U
Sodium	0.100	0.500	0.100	U
Nickel	0.0100	0.0400	0.0100	U
Antimony	0.0100	0.0200	0.0100	U
Vanadium	0.00500	0.0100	0.00500	U
Zinc	0.0100	0.0200	0.0100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461052
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00082659

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-06
Instrument ID: ICP-THERMO2 Run Time: 10:45 Method: 6010B
File ID: T2.080709.104525 Analyst: EDA Units: mg/L
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Aluminum		10	9.98	99.8	90 - 110	
Silver		.4	0.399	99.7	90 - 110	
Barium		1	0.991	99.1	90 - 110	
Beryllium		.05	0.0509	102	90 - 110	
Calcium		10	10.0	100	90 - 110	
Cadmium		.05	0.0494	98.8	90 - 110	
Cobalt		.2	0.200	100	90 - 110	
Chromium		.5	0.498	99.6	90 - 110	
Copper		.5	0.497	99.4	90 - 110	
Iron		4	3.98	99.5	90 - 110	
Potassium		50	49.8	99.7	90 - 110	
Magnesium		10	9.87	98.7	90 - 110	
Manganese		.5	0.513	103	90 - 110	
Sodium		50	49.4	98.7	90 - 110	
Nickel		.5	0.518	104	90 - 110	
Antimony		1.2	1.20	99.9	90 - 110	
Vanadium		1	1.01	101	90 - 110	
Zinc		1	1.01	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1461058
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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082660

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-10
Instrument ID: ICP-THERMO2 Run Time: 11:10 Method: 6010B
File ID: T2.080709.111051 Analyst: EDA QC Key: STD
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	10.0	mg/L	100	90 - 110		
Silver		0.400	0.400	mg/L	99.9	90 - 110		
Barium		1.00	0.989	mg/L	98.9	90 - 110		
Beryllium		0.0500	0.0509	mg/L	102	90 - 110		
Calcium		10.0	10.0	mg/L	100	90 - 110		
Cadmium		0.0500	0.0495	mg/L	99.0	90 - 110		
Cobalt		0.200	0.199	mg/L	99.7	90 - 110		
Chromium		0.500	0.498	mg/L	99.6	90 - 110		
Copper		0.500	0.497	mg/L	99.5	90 - 110		
Iron		4.00	3.97	mg/L	99.3	90 - 110		
Potassium		50.0	49.8	mg/L	99.7	90 - 110		
Magnesium		10.0	9.88	mg/L	98.8	90 - 110		
Manganese		0.500	0.512	mg/L	102	90 - 110		
Sodium		50.0	49.3	mg/L	98.7	90 - 110		
Nickel		0.500	0.513	mg/L	103	90 - 110		
Antimony		1.20	1.19	mg/L	99.5	90 - 110		
Vanadium		1.00	1.01	mg/L	101	90 - 110		
Zinc		1.00	1.01	mg/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1461051
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082661

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-12
Instrument ID: ICP-THERMO2 Run Time: 11:30 Method: 6010B
File ID: T2.080709.113001 Analyst: EDA QC Key: STD
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.77	mg/L	97.7	90 - 110		
Silver		0.400	0.392	mg/L	98.1	90 - 110		
Barium		1.00	0.974	mg/L	97.4	90 - 110		
Beryllium		0.0500	0.0494	mg/L	98.8	90 - 110		
Calcium		10.0	9.84	mg/L	98.4	90 - 110		
Cadmium		0.0500	0.0486	mg/L	97.2	90 - 110		
Cobalt		0.200	0.197	mg/L	98.5	90 - 110		
Chromium		0.500	0.489	mg/L	97.8	90 - 110		
Copper		0.500	0.493	mg/L	98.6	90 - 110		
Iron		4.00	3.89	mg/L	97.2	90 - 110		
Potassium		50.0	49.1	mg/L	98.3	90 - 110		
Magnesium		10.0	9.64	mg/L	96.4	90 - 110		
Manganese		0.500	0.502	mg/L	100	90 - 110		
Sodium		50.0	48.7	mg/L	97.5	90 - 110		
Nickel		0.500	0.504	mg/L	101	90 - 110		
Antimony		1.20	1.18	mg/L	98.3	90 - 110		
Vanadium		1.00	0.984	mg/L	98.4	90 - 110		
Zinc		1.00	0.984	mg/L	98.4	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1461051
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082662

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-14
Instrument ID: ICP-THERMO2 Run Time: 12:33 Method: 6010B
File ID: T2.080709.123328 Analyst: EDA QC Key: STD
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.73	mg/L	97.3	90 - 110		
Silver		0.400	0.398	mg/L	99.4	90 - 110		
Barium		1.00	0.968	mg/L	96.8	90 - 110		
Beryllium		0.0500	0.0492	mg/L	98.4	90 - 110		
Calcium		10.0	9.83	mg/L	98.3	90 - 110		
Cadmium		0.0500	0.0484	mg/L	96.8	90 - 110		
Cobalt		0.200	0.196	mg/L	98.0	90 - 110		
Chromium		0.500	0.496	mg/L	99.1	90 - 110		
Copper		0.500	0.491	mg/L	98.2	90 - 110		
Iron		4.00	3.97	mg/L	99.3	90 - 110		
Potassium		50.0	49.2	mg/L	98.5	90 - 110		
Magnesium		10.0	9.59	mg/L	95.9	90 - 110		
Manganese		0.500	0.500	mg/L	100	90 - 110		
Sodium		50.0	48.6	mg/L	97.3	90 - 110		
Nickel		0.500	0.500	mg/L	99.9	90 - 110		
Antimony		1.20	1.16	mg/L	96.7	90 - 110		
Vanadium		1.00	0.977	mg/L	97.7	90 - 110		
Zinc		1.00	0.976	mg/L	97.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
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Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082663

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-16
Instrument ID: ICP-THERMO2 Run Time: 13:05 Method: 6010B
File ID: T2.080709.130539 Analyst: EDA QC Key: STD
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.75	mg/L	97.5	90 - 110		
Silver		0.400	0.396	mg/L	99.1	90 - 110		
Barium		1.00	0.958	mg/L	95.8	90 - 110		
Beryllium		0.0500	0.0493	mg/L	98.7	90 - 110		
Calcium		10.0	9.77	mg/L	97.7	90 - 110		
Cadmium		0.0500	0.0482	mg/L	96.4	90 - 110		
Cobalt		0.200	0.194	mg/L	97.1	90 - 110		
Chromium		0.500	0.494	mg/L	98.9	90 - 110		
Copper		0.500	0.486	mg/L	97.2	90 - 110		
Iron		4.00	3.92	mg/L	98.0	90 - 110		
Potassium		50.0	48.8	mg/L	97.6	90 - 110		
Magnesium		10.0	9.54	mg/L	95.4	90 - 110		
Manganese		0.500	0.497	mg/L	99.4	90 - 110		
Sodium		50.0	48.2	mg/L	96.3	90 - 110		
Nickel		0.500	0.496	mg/L	99.2	90 - 110		
Antimony		1.20	1.15	mg/L	96.0	90 - 110		
Vanadium		1.00	0.984	mg/L	98.4	90 - 110		
Zinc		1.00	0.969	mg/L	96.9	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1461051
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082664

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-18
Instrument ID: ICP-THERMO2 Run Time: 13:45 Method: 6010B
File ID: T2.080709.134525 Analyst: EDA QC Key: STD
Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.68	mg/L	96.8	90 - 110		
Silver		0.400	0.396	mg/L	99.1	90 - 110		
Barium		1.00	0.965	mg/L	96.5	90 - 110		
Beryllium		0.0500	0.0489	mg/L	97.8	90 - 110		
Calcium		10.0	9.83	mg/L	98.3	90 - 110		
Cadmium		0.0500	0.0479	mg/L	95.8	90 - 110		
Cobalt		0.200	0.194	mg/L	97.1	90 - 110		
Chromium		0.500	0.493	mg/L	98.7	90 - 110		
Copper		0.500	0.489	mg/L	97.7	90 - 110		
Iron		4.00	3.94	mg/L	98.5	90 - 110		
Potassium		50.0	49.2	mg/L	98.4	90 - 110		
Magnesium		10.0	9.55	mg/L	95.5	90 - 110		
Manganese		0.500	0.495	mg/L	99.0	90 - 110		
Sodium		50.0	48.6	mg/L	97.1	90 - 110		
Nickel		0.500	0.496	mg/L	99.1	90 - 110		
Antimony		1.20	1.15	mg/L	95.7	90 - 110		
Vanadium		1.00	0.970	mg/L	97.0	90 - 110		
Zinc		1.00	0.963	mg/L	96.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1461051
Report generated 08/07/2009 14:41

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00082665

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309254-20

Instrument ID: ICP-THERMO2 Run Time: 14:29 Method: 6010B

File ID: T2.080709.142920 Analyst: EDA QC Key: STD

Workgroup (AAB#): WG309237 Cal ID: ICP-TH - 07-AUG-09

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Aluminum		10.0	9.42	mg/L	94.2	90 - 110		
Silver		0.400	0.385	mg/L	96.3	90 - 110		
Barium		1.00	0.941	mg/L	94.1	90 - 110		
Beryllium		0.0500	0.0473	mg/L	94.6	90 - 110		
Calcium		10.0	9.60	mg/L	96.0	90 - 110		
Cadmium		0.0500	0.0466	mg/L	93.3	90 - 110		
Cobalt		0.200	0.190	mg/L	94.9	90 - 110		
Chromium		0.500	0.478	mg/L	95.6	90 - 110		
Copper		0.500	0.479	mg/L	95.8	90 - 110		
Iron		4.00	3.82	mg/L	95.6	90 - 110		
Potassium		50.0	48.1	mg/L	96.2	90 - 110		
Magnesium		10.0	9.32	mg/L	93.2	90 - 110		
Manganese		0.500	0.480	mg/L	96.0	90 - 110		
Sodium		50.0	47.5	mg/L	94.9	90 - 110		
Nickel		0.500	0.484	mg/L	96.8	90 - 110		
Antimony		1.20	1.12	mg/L	93.6	90 - 110		
Vanadium		1.00	0.944	mg/L	94.4	90 - 110		
Zinc		1.00	0.938	mg/L	93.8	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1461051

Report generated 08/07/2009 14:41

Login number: L09080106 **Workgroup (AAB#):** WG309237
Instrument ID: ICP-THERMO2 **Method:** 6010B
Sol. A : WG309254-08 **File ID:** T2.080709.105809 **Units:** mg/L
Sol. AB : WG309254-09 **File ID:** T2.080709.110432 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Aluminum	250	263	105	250	260	104	
Antimony	NS	-0.00436	NS	0.500	0.496	99.2	
Barium	NS	0.0000600	NS	0.250	0.246	98.4	
Beryllium	NS	0.0000600	NS	0.250	0.242	96.8	
Cadmium	NS	0.000150	NS	0.500	0.486	97.2	
Calcium	250	255	102	250	253	101	
Chromium	NS	0.00165	NS	0.250	0.234	93.6	
Cobalt	NS	0.00159	NS	0.250	0.236	94.4	
Copper	NS	0.000540	NS	0.250	0.240	96.0	
Iron	100	96.9	96.9	100	96.2	96.2	
Magnesium	250	259	104	250	256	102	
Manganese	NS	-0.000690	NS	0.250	0.241	96.4	
Nickel	NS	-0.00212	NS	0.500	0.468	93.6	
Potassium	NS	0.00671	NS	5.00	5.07	101	
Silver	NS	0.000390	NS	0.500	0.478	95.6	
Sodium	NS	0.00987	NS	5.00	5.02	100	
Vanadium	NS	0.00551	NS	0.250	0.244	97.6	
Zinc	NS	-0.00722	NS	0.500	0.455	91.0	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

ICS - Modified 03/06/2008
PDF File ID: 1461050
Report generated 08/07/2009 14:41

Login Number: L09080106 **Date:** 02/02/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	AL	AS	B	BA	BE
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0.0000210	0	0	0	0
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.00	0	0	0	0	0
BORON	249.70	0	0	0	0	0
CADMIUM	228.80	0	0.00250	0	0	0
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0	0	0	0	0
IRON	261.20	0	0	0	0	0
LEAD	220.30	0.000249	0	0	0	0
LITHIUM	670.80	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.00	-0.0000300	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.00	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.80	0	0	0	0	0
THALLIUM	190.80	-0.0000120	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.30	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0
ZINC	206.20	0.0000420	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1461046
Report generated: 08/07/2009 14:41

Login Number: L09080106 **Date:** 02/02/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	CA	CO	CR	CU	FE
ALUMINUM	308.20	0	-0.000820	0	0	0
ANTIMONY	206.80	0	0	0.00950	0	0.0000560
ARSENIC	189.00	0	0	0.000490	0	-0.0000120
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.00	0	0	0	0	0
BORON	249.70	0	0.00343	0	0	-0.000619
CADMIUM	228.80	0	0	0	0	0.0000220
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0.0000220
COBALT	228.60	0	0	0.000108	0	0
COPPER	224.70	0	0.0000770	0	0	0.000480
IRON	261.20	0	0	0	0	0
LEAD	220.30	0	-0.0000930	-0.000172	0.000809	0
LITHIUM	670.80	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	-0.0000920	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0.000100	0	0	0.0000320
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.00	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.00	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.80	0.0000140	0	0	0	0
THALLIUM	190.80	0	0.00397	0.000276	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.30	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	-0.0000300
ZINC	206.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1461046
Report generated: 08/07/2009 14:41

Login Number: L09080106 **Date:** 02/02/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	LI	MG	MN	MO	NA
ALUMINUM	308.20	0	0	0	0.0153	0
ANTIMONY	206.80	0	0	0	0.000670	0
ARSENIC	189.00	0	0	0	0.00109	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.00	0	0	0	0	0
BORON	249.70	0	0	0	-0.00169	0
CADMIUM	228.80	0	0	0	0.0000220	0
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0.000160	0	0
COBALT	228.60	0	0	0	-0.000983	0
COPPER	224.70	0	0	0	0.00274	0
IRON	261.20	0	0	0	0	0
LEAD	220.30	0	0	0	-0.00183	0
LITHIUM	670.80	0	0	0	0	0
MAGNESIUM	279.10	0	0	-0.00190	-0.0110	0
MANGANESE	257.60	0	0.0000190	0	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.00	0	0	0	0.000156	0
SILICON	212.40	0	0	0	0.0187	0
SILVER	328.00	0	0	0	-0.0000440	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.80	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.30	0	0	0	-0.000153	0
VANADIUM	292.40	0	0	0	-0.00778	0
ZINC	206.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1461046
Report generated: 08/07/2009 14:41

Login Number: L09080106 **Date:** 02/02/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	NI	SB	SN	SR	TI
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0	-0.00840	0	-0.000990
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.00	0	0	0	0	0
BORON	249.70	0	0	0	0	0
CADMIUM	228.80	-0.000128	0	0	0	0
CALCIUM	422.70	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0.0000550
COBALT	228.60	0.000175	0	0	0	0.00188
COPPER	224.70	-0.0120	0	0	0	0.000269
IRON	261.20	0	0	0	0	0
LEAD	220.30	0.000110	0	0	0	0
LITHIUM	670.80	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	-0.00290
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.00	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.00	0	0	0	0	-0.00620
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.80	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	-0.00170
TIN	189.90	0	0	0	0	-0.00220
TITANIUM	337.30	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0.000824
ZINC	206.20	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1461046
Report generated: 08/07/2009 14:41

Login Number: L09080106 **Date:** 02/02/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Wave Length	V	ZN
ALUMINUM	308.20	0.00300	0
ANTIMONY	206.80	-0.00438	0
ARSENIC	189.00	0.000107	0
BARIUM	455.40	0	0
BERYLLIUM	313.00	0	0
BORON	249.70	0	0
CADMIUM	228.80	0.000102	0
CALCIUM	422.70	0	0
CHROMIUM	267.70	0	0
COBALT	228.60	0.0000200	0
COPPER	224.70	0	0
IRON	261.20	0	0
LEAD	220.30	-0.000126	0
LITHIUM	670.80	0	0
MAGNESIUM	279.10	0	0
MANGANESE	257.60	0	0
MOLYBDENUM	202.03	-0.000110	0
NICKEL	231.60	0	0
POTASSIUM	766.40	0	0
SELENIUM	196.00	0	0
SILICON	212.40	0	0
SILVER	328.00	-0.00617	0
SODIUM	589.50	0	0
STRONTIUM	407.80	0	0
THALLIUM	190.80	-0.0282	0
TIN	189.90	0	0
TITANIUM	337.30	0	0
VANADIUM	292.40	0	0
ZINC	206.20	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1461046
Report generated: 08/07/2009 14:41

Login Number: L09080106 **Date:** 06/11/2009
Insturment ID: ICP-THERMO2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	900.0
Antimony	10.00	90.0
Arsenic	10.00	90.0
Barium	10.00	90.0
Beryllium	15.00	9.0
Boron	10.00	90.0
Cadmium	10.00	18.0
Calcium	10.00	900.0
Chromium	10.00	90.0
Cobalt	10.00	90.0
Copper	10.00	180.0
Iron	5.00	900.0
Lead	10.00	180.0
Lithium	10.00	90.0
Magnesium	15.00	900.0
Manganese	15.00	180.0
Molybdenum	10.00	18.0
Nickel	10.00	90.0
Potassium	10.00	315.0
Selenium	10.00	81.0
Silicon	10.00	90.0
Silver	5.00	9.0
Sodium	10.00	315.0
Strontium	10.00	4.5
Thallium	10.00	9.0
Tin	10.00	90.0
Titanium	15.00	90.0
Vanadium	10.00	90.0
Zinc	10.00	45.0

Comments:
All analytes passed acceptance criteria at the specified concentration.

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1461045
Report generated: 08/07/2009 14:41

2.3.2 Metals ICP-MS Data

2.3.2.1 Summary Data

LABORATORY REPORT

00082675

L09080106

08/11/09 16:16

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRCSFL04	L09080106-01	6020	1	06-AUG-09
PRCSWDF	L09080106-02	6020	10	06-AUG-09
PRCL01	L09080106-03	6020	1	06-AUG-09
PRCSWDF-MS	L09080106-04	6020	10	06-AUG-09
PRCSWDF-MSD	L09080106-05	6020	10	06-AUG-09

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082676

Sample Number:	L09080106-01	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	PRCSFL04	Prep Method:	3051	Prep Date:	08/07/2009 06:33
Matrix:	Soil	Analytical Method:	6020	Cal Date:	08/07/2009 10:16
Workgroup Number:	WG309201	Analyst:	JYH	Run Date:	08/07/2009 11:50
Collect Date:	08/05/2009 13:45	Dilution:	1	File ID:	EL.080709.115022
Sample Tag:	01	Units:	mg/kg	Percent Solid:	83.8

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	7439-92-1	9.98		0.233	0.116

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082677

Sample Number:	L09080106-02	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	PRCSWDF	Prep Method:	3051	Prep Date:	08/07/2009 06:33
Matrix:	Soil	Analytical Method:	6020	Cal Date:	08/07/2009 10:16
Workgroup Number:	WG309201	Analyst:	JYH	Run Date:	08/07/2009 12:56
Collect Date:	08/05/2009 13:40	Dilution:	10	File ID:	EL.080709.125601
Sample Tag:	DL01	Units:	mg/kg	Percent Solid:	81.9

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	7439-92-1	20.1		2.38	1.19

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082678

Sample Number:	**L09080106-03**	PrePrep Method:	**NONE**	Instrument:	**ELAN-ICP**
Client ID:	**PRCL01**	Prep Method:	**3051**	Prep Date:	**08/07/2009 06:33**
Matrix:	**Soil**	Analytical Method:	**6020**	Cal Date:	**08/07/2009 10:16**
Workgroup Number:	**WG309201**	Analyst:	**JYH**	Run Date:	**08/07/2009 12:15**
Collect Date:	**08/05/2009 13:30**	Dilution:	**1**	File ID:	**EL.080709.121520**
Sample Tag:	**01**	Units:	**mg/kg**	Percent Solid:	**81.8**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Arsenic, Total	**7440-38-2**	**8.92**		**0.351**	**0.0878**
Lead, Total	**7439-92-1**	**2.84**		**0.234**	**0.117**
Selenium, Total	**7782-49-2**	**0.208**	**J**	**0.234**	**0.117**
Thallium, Total	**7440-28-0**	**0.0294**		**0.0234**	**0.0117**

J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082679

Sample Number:	**L09080106-04**	PrePrep Method:	**NONE**	Instrument:	**ELAN-ICP**
Client ID:	**PRCSWDF-MS**	Prep Method:	**3051**	Prep Date:	**08/07/2009 06:33**
Matrix:	**Soil**	Analytical Method:	**6020**	Cal Date:	**08/07/2009 10:16**
Workgroup Number:	**WG309201**	Analyst:	**JYH**	Run Date:	**08/07/2009 13:02**
Collect Date:	**08/05/2009 13:40**	Dilution:	**10**	File ID:	**EL.080709.130216**
Sample Tag:	**DL01**	Units:	**mg/kg**	Percent Solid:	**81.9**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	**7439-92-1**	**61.3**		**2.38**	**1.19**

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082680

Sample Number: **L09080106-05**
Client ID: **PRCSWDF-MSD**
Matrix: **Soil**
Workgroup Number: **WG309201**
Collect Date: **08/05/2009 13:40**
Sample Tag: **DL01**

PrePrep Method: **NONE**
Prep Method: **3051**
Analytical Method: **6020**
Analyst: **JYH**
Dilution: **10**
Units: **mg/kg**

Instrument: **ELAN-ICP**
Prep Date: **08/07/2009 06:33**
Cal Date: **08/07/2009 10:16**
Run Date: **08/07/2009 13:08**
File ID: **EL.080709.130830**
Percent Solid: **81.9**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	7439-92-1	29.9		2.38	1.19

2.3.2.2 QC Summary Data

Example 6020 Calculations
Perkin Elmer ELAN 6100

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Final volume	100
Vi = Initial volume	40
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in (ug/L)	0.25

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Final volume	200
Vi = Initial volume	0.5
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in (ug/kg)	40

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	40
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (ug/kg)	50

50 ug/kg = 0.050 mg/kg

Perkin Elmer ELAN ICP/MS

STANDARDS KEY

QC Std 1 - ICV
QC Std 2 - ICB
QC Std 3 - CRI - Soil
QC Std 4 - CRI - Water
QC Std 5 - ICSA
QC Std 6 - ICSAB
QC Std 7 - CCV
QC Std 8 - CCB

Calibration Solutions

Analyte	Stock Conc. (mg/L)	S1 (mg/L)	S2 (mg/L)	S3 (mg/L)	S4 (mg/L)
Al	10	0	0.0004	0.05	0.1
Sb	10	0	0.0004	0.05	0.1
As	10	0	0.0004	0.05	0.1
Ba	10	0	0.0004	0.05	0.1
Be	10	0	0.0004	0.05	0.1
Ca	1000	0	0.04	5	10
Cd	10	0	0.0004	0.05	0.1
Cr	10	0	0.0004	0.05	0.1
Co	10	0	0.0004	0.05	0.1
Cu	10	0	0.0004	0.05	0.1
Fe	1000	0	0.04	5	10
Pb	10	0	0.0004	0.05	0.1
Mg	1000	0	0.04	5	10
Mn	10	0	0.0004	0.05	0.1
Ni	10	0	0.0004	0.05	0.1
K	1000	0	0.04	5	10
Se	10	0	0.0004	0.05	0.1
Ag	10	0	0.0004	0.05	0.1
Na	1000	0	0.04	5	10
Tl	10	0	0.0004	0.05	0.1
V	10	0	0.0004	0.05	0.1
U	1000	0	0.0004	0.05	0.1
Zn	10	0	0.0004	0.05	0.1

Microbac Laboratories Inc.
Microwave Digestion Log

00082684

Workgroup: WG309183
Analyst: VC
Spike Analyst: VC
Run Date: 08/07/2009 06:33
Method: 3051

SOP: ME406 Revison 11
Spike Solution: STD33694
Spike Witness: REK
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG309183-02	BLANK	7	.5 g	200 mL	173.833 g	173.826 g		
2	WG309183-03	LCS	7	.5 g	200 mL	174.111 g	174.062 g	.5 mL	
3	L09080106-01	SAMP	7	.513 g	200 mL	176.585 g	176.578 g		08/07/09
4	WG309183-01	REF	7	.513 g	200 mL	173.08 g	173.066 g		
5	L09080106-02	RS01	7	.513 g	200 mL	173.08 g	173.066 g		08/07/09
6	L09080106-03	SAMP	7	.522 g	200 mL	174.448 g	174.437 g		08/07/09
7	WG309183-04	MS	7	.513 g	200 mL	174.951 g	174.944 g	.5 mL	
8	L09080106-04	MS01	7	.513 g	200 mL	174.951 g	174.944 g	.5 mL	08/07/09
9	WG309183-05	MSD	7	.513 g	200 mL	175.531 g	175.52 g	.5 mL	
10	L09080106-05	SD01	7	.513 g	200 mL	175.531 g	175.52 g	.5 mL	08/07/09
11	L09080127-01	SAMP	7	.544 g	200 mL	176.383 g	176.369 g		08/10/09

Analyst: Vicki Collins

Reviewer:

MW_DIG - Modified 07/02/2008
PDF ID: 1460025
Report generated: 08/07/2009 07:23

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ELAN-ICP Dataset: 080709A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 6
Maintenance Log ID:

Calibration Std: STD34439 ICV/CCV Std: STD34194 Post Spike: STD33697
ICSA: STD34135 ICSAB: STD34134 Int. Std: STD34348

Workgroups: 309144,309201,309217,309263,309040,308782,309275,309276,3091

Comments: 309201

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	EL.080709.095330	Blank	Blank		1		08/07/09 09:53
2	EL.080709.095913	WG309258-01	Calibration Point		1		08/07/09 09:59
3	EL.080709.100456	WG309258-02	Calibration Point		1		08/07/09 10:04
4	EL.080709.101040	WG309258-03	Calibration Point		1		08/07/09 10:10
5	EL.080709.101625	WG309258-04	Calibration Point		1		08/07/09 10:16
6	EL.080709.102210	WG309258-05	Initial Calibration Verification		1		08/07/09 10:22
7	EL.080709.102904	WG309258-06	Initial Calib Blank		1		08/07/09 10:29
8	EL.080709.103600	WG309258-07	CRQL Check Solid		1		08/07/09 10:36
9	EL.080709.104259	WG309258-08	CRQL Check Water		1		08/07/09 10:42
10	EL.080709.104957	WG309258-09	Interference Check		1		08/07/09 10:49
11	EL.080709.105654	WG309258-10	Interference Check		1		08/07/09 10:56
12	EL.080709.110350	WG309258-11	CCV		1		08/07/09 11:03
13	EL.080709.111044	WG309258-12	CCB		1		08/07/09 11:10
14	EL.080709.111717	L09080005-01	LOQ-1	40/100	1		08/07/09 11:17
15	EL.080709.112330	WG309183-02	Method/Prep Blank	.5/200	1		08/07/09 11:23
16	EL.080709.113005	WG309258-13	CCV		1		08/07/09 11:30
17	EL.080709.113659	WG309258-14	CCB		1		08/07/09 11:36
18	EL.080709.114332	WG309183-03	Laboratory Control S	.5/200	1		08/07/09 11:43
19	EL.080709.115022	L09080106-01	PRCSFL04	.513/200	1		08/07/09 11:50
20	EL.080709.115636	WG309183-01	Reference Sample		1	L09080106-02	08/07/09 11:56
21	EL.080709.120250	WG309183-04	Matrix Spike	.513/200	1	L09080106-02	08/07/09 12:02
22	EL.080709.120905	WG309183-05	Matrix Spike Duplica	.513/200	1	L09080106-02	08/07/09 12:09
23	EL.080709.121520	L09080106-03	PRCL01	.522/200	1		08/07/09 12:15
24	EL.080709.122136	WG309201-01	Post Digestion Spike		1	L09080106-03	08/07/09 12:21
25	EL.080709.122752	WG309201-02	Serial Dilution		5	L09080106-03	08/07/09 12:27
26	EL.080709.123408	L09080127-01	G-31-HSS003B (0.5)	.544/200	10		08/07/09 12:34
27	EL.080709.124044	WG309258-15	CCV		1		08/07/09 12:40
28	EL.080709.124738	WG309258-16	CCB		1		08/07/09 12:47
29	EL.080709.125601	WG309183-01	Reference Sample		10	L09080106-02	08/07/09 12:56
30	EL.080709.130216	WG309183-04	Matrix Spike	.513/200	10	L09080106-02	08/07/09 13:02
31	EL.080709.130830	WG309183-05	Matrix Spike Duplica	.513/200	10	L09080106-02	08/07/09 13:08
32	EL.080709.131506	WG309258-17	CCV		1		08/07/09 13:15
33	EL.080709.132200	WG309258-18	CCB		1		08/07/09 13:22
34	EL.080709.132835	WG309190-03	Method/Prep Blank	40/100	1		08/07/09 13:28
35	EL.080709.133450	WG309190-04	Laboratory Control S	40/100	1		08/07/09 13:34
36	EL.080709.134103	L09080081-03	POLISHED WATER -FRIDAY	40/100	1		08/07/09 13:41
37	EL.080709.134717	L09080081-04	DI WATER -FRIDAY	40/100	1		08/07/09 13:47

Page: 1 Approved: August 10, 2009

Sheri L. Babgard

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ELAN-ICP Dataset: 080709A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 6
Maintenance Log ID:

Calibration Std: STD34439 ICV/CCV Std: STD34194 Post Spike: STD33697
ICSA: STD34135 ICSAB: STD34134 Int. Std: STD34348

Workgroups: 309144,309201,309217,309263,309040,308782,309275,309276,3091

Comments: 309201

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	EL.080709.135332	L09080100-01	OUTFALL 002/COMP	40/100	1	WG309190-01	08/07/09 13:53
39	EL.080709.140007	WG309258-19	CCV		1		08/07/09 14:00
40	EL.080709.140701	WG309258-20	CCB		1		08/07/09 14:07
41	EL.080709.141335	WG309190-05	Duplicate	40/100	1	L09080100-01	08/07/09 14:13
42	EL.080709.141950	WG309190-02	Reference Sample		1	L09080100-01	08/07/09 14:19
43	EL.080709.142605	WG309190-06	Matrix Spike	40/100	1		08/07/09 14:26
44	EL.080709.143221	WG309190-07	Matrix Spike Duplica	40/100	1	L09080100-01	08/07/09 14:32
45	EL.080709.143837	L09080124-02	LTL-K-EQBLK-2	40/100	1		08/07/09 14:38
46	EL.080709.144454	WG309217-01	Post Digestion Spike		1	L09080124-01	08/07/09 14:44
47	EL.080709.145110	WG309217-02	Serial Dilution		5	L09080124-01	08/07/09 14:51
48	EL.080709.145747	WG309258-21	CCV		1		08/07/09 14:57
49	EL.080709.150441	WG309258-22	CCB		1		08/07/09 15:04
50	EL.080709.151456	WG309251-02	Method/Prep Blank	.5/200	1		08/07/09 15:14
51	EL.080709.152112	WG309251-03	Laboratory Control S	.5/200	1		08/07/09 15:21
52	EL.080709.152725	WG309251-01	Reference Sample		1	L09080143-08	08/07/09 15:27
53	EL.080709.153340	WG309251-04	Matrix Spike		1	L09080143-08	08/07/09 15:33
54	EL.080709.153954	WG309251-05	Matrix Spike Duplica		1	L09080143-08	08/07/09 15:39
55	EL.080709.154609	L09080143-01	PRCSFL03	.521/200	1		08/07/09 15:46
56	EL.080709.155224	L09080143-02	PRCSFL03-QC	.536/200	1		08/07/09 15:52
57	EL.080709.155840	WG309263-01	Post Digestion Spike		1	L09080143-02	08/07/09 15:58
58	EL.080709.160456	WG309263-02	Serial Dilution		5	L09080143-02	08/07/09 16:04
59	EL.080709.161132	WG309258-23	CCV		1		08/07/09 16:11
60	EL.080709.161826	WG309258-24	CCB		1		08/07/09 16:18
61	EL.080709.162501	L09080143-03	PRCSWBD	.549/200	1		08/07/09 16:25
62	EL.080709.163117	L09080143-04	PRCSFL01		1		08/07/09 16:31
63	EL.080709.163734	L09080143-05	PRCSWHB	.525/200	1		08/07/09 16:37
64	EL.080709.164351	L09080143-06	PRCSFL02	.514/200	1		08/07/09 16:43
65	EL.080709.165007	L09080143-07	PRCSWFH		1		08/07/09 16:50
66	EL.080709.165657	WG309251-01	Reference Sample		10	L09080143-08	08/07/09 16:56
67	EL.080709.170311	WG309251-04	Matrix Spike	.511/200	10	L09080143-08	08/07/09 17:03
68	EL.080709.170926	WG309251-05	Matrix Spike Duplica	.51/200	10	L09080143-08	08/07/09 17:09
69	EL.080709.171542	L09080143-04	PRCSFL01	.522/200	10		08/07/09 17:15
70	EL.080709.172157	L09080143-07	PRCSWFH	.501/200	50		08/07/09 17:21
71	EL.080709.172832	WG309258-25	CCV		1		08/07/09 17:28
72	EL.080709.173526	WG309258-26	CCB		1		08/07/09 17:35
73	EL.080709.174200	WG309240-01	Method/Prep Blank		1		08/07/09 17:42
74	EL.080709.174815	WG309240-02	Laboratory Control S		1		08/07/09 17:48

Page: 2 Approved: August 10, 2009

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ELAN-ICP Dataset: 080709A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 6
Maintenance Log ID:

Calibration Std: STD34439 ICV/CCV Std: STD34194 Post Spike: STD33697
ICSA: STD34135 ICSAB: STD34134 Int. Std: STD34348

Workgroups: 309144,309201,309217,309263,309040,308782,309275,309276,3091

Comments: 309201

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	EL.080709.175430	WG309240-03	Laboratory Control S		1		08/07/09 17:54
76	EL.080709.180046	L09080139-03	L09070470-01		1		08/07/09 18:00
77	EL.080709.180702	L09080139-04	L09070470-08		1		08/07/09 18:07
78	EL.080709.181318	WG309264-01	Post Digestion Spike		1	L09080139-04	08/07/09 18:13
79	EL.080709.181935	WG309264-02	Serial Dilution		5	L09080139-04	08/07/09 18:19
80	EL.080709.182611	WG309258-27	CCV		1		08/07/09 18:26
81	EL.080709.183306	WG309258-28	CCB		1		08/07/09 18:33
82	EL.080709.183941	WG309241-01	Method/Prep Blank		1		08/07/09 18:39
83	EL.080709.184559	WG309241-02	Laboratory Control S		1		08/07/09 18:45
84	EL.080709.185216	WG309241-03	Laboratory Control S		1		08/07/09 18:52
85	EL.080709.185834	L09080139-01	L09070470-01		1		08/07/09 18:58
86	EL.080709.190451	L09080139-02	L09070470-08		1		08/07/09 19:04
87	EL.080709.191106	WG309241-01	Method/Prep Blank		1		08/07/09 19:11
88	EL.080709.191721	WG309266-02	Serial Dilution		5	L09080139-02	08/07/09 19:17
89	EL.080709.192357	WG309258-29	CCV		1		08/07/09 19:23
90	EL.080709.193052	WG309258-30	CCB		1		08/07/09 19:30
91	EL.080709.193726	L09070202-02	02SB027A (0-6)	40/100	1		08/07/09 19:37
92	EL.080709.194342	L09070202-03	02SB028B (12-18)	40/100	1		08/07/09 19:43
93	EL.080709.194958	L09080049-01	FB014 (080109)	40/100	1		08/07/09 19:49
94	EL.080709.195615	WG308719-01	Reference Sample		100	L09070704-01	08/07/09 19:56
95	EL.080709.200232	WG308719-04	Matrix Spike	.512/200	100	L09070704-01	08/07/09 20:02
96	EL.080709.200849	WG308719-05	Matrix Spike Duplica	.513/200	100	L09070704-01	08/07/09 20:08
97	EL.080709.201507	WG308782-01	Post Digestion Spike		100	L09070704-01	08/07/09 20:15
98	EL.080709.202125	WG308782-02	Serial Dilution		500	L09070704-01	08/07/09 20:21
99	EL.080709.202802	WG309258-31	CCV		1		08/07/09 20:28
100	EL.080709.203457	WG309258-32	CCB		1		08/07/09 20:34
101	EL.080709.204133	WG308175-03	Method/Prep Blank	40/100	1		08/07/09 20:41
102	EL.080709.204750	WG308175-04	Laboratory Control S	40/100	1		08/07/09 20:47
103	EL.080709.205405	WG308175-02	Reference Sample		1	L09070545-06	08/07/09 20:54
104	EL.080709.210021	WG308175-06	Matrix Spike	40/100	1	L09070545-06	08/07/09 21:00
105	EL.080709.210637	WG308175-07	Matrix Spike Duplica	40/100	1	L09070545-06	08/07/09 21:06
106	EL.080709.211254	L09070545-01	1:1.5 BCR:MIW	40/100	1		08/07/09 21:12
107	EL.080709.211911	L09070545-02	1:3 BCR:MIW	40/100	1		08/07/09 21:19
108	EL.080709.212528	L09070545-03	PH 3	40/100	1		08/07/09 21:25
109	EL.080709.213146	WG309275-01	Post Digestion Spike		1	L09070545-03	08/07/09 21:31
110	EL.080709.213804	WG309275-02	Serial Dilution		5	L09070545-03	08/07/09 21:38
111	EL.080709.214441	WG309258-33	CCV		1		08/07/09 21:44

Page: 3 Approved: August 10, 2009

Sheri L. Babgard

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ELAN-ICP Dataset: 080709A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 6
Maintenance Log ID:

Calibration Std: STD34439 ICV/CCV Std: STD34194 Post Spike: STD33697
ICSA: STD34135 ICSAB: STD34134 Int. Std: STD34348

Workgroups: 309144,309201,309217,309263,309040,308782,309275,309276,3091

Comments: 309201

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
112	EL.080709.215136	WG309258-34	CCB		1		08/07/09 21:51
113	EL.080709.215811	L09070545-04	PH 3.7	40/100	1		08/07/09 21:58
114	EL.080709.220430	L09070545-05	1:15 BCR:MIW	40/100	1		08/07/09 22:04
115	EL.080709.221049	WG308175-05	Duplicate	40/100	1	L09070545-05	08/07/09 22:10
116	EL.080709.221727	WG309258-35	CCV		1		08/07/09 22:17
117	EL.080709.222421	WG309258-36	CCB		1		08/07/09 22:24
118	EL.080709.223056	WG308694-02	Method/Prep Blank	40/100	1		08/07/09 22:30
119	EL.080709.223711	WG308694-03	Laboratory Control S	40/100	1		08/07/09 22:37
120	EL.080709.224328	WG308694-01	Reference Sample		1	L09070681-25	08/07/09 22:43
121	EL.080709.224944	WG308694-04	Matrix Spike	40/100	1	L09070681-25	08/07/09 22:49
122	EL.080709.225601	WG308694-05	Matrix Spike Duplica	40/100	1	L09070681-25	08/07/09 22:56
123	EL.080709.230218	L09070681-04	MW2A-239-20	40/100	1		08/07/09 23:02
124	EL.080709.230836	L09070681-09	MW4A-239-20	40/100	1		08/07/09 23:08
125	EL.080709.231454	WG309276-01	Post Digestion Spike		1	L09070681-09	08/07/09 23:14
126	EL.080709.232112	WG309276-02	Serial Dilution		5	L09070681-09	08/07/09 23:21
127	EL.080709.232750	WG309258-37	CCV		1		08/07/09 23:27
128	EL.080709.233444	WG309258-38	CCB		1		08/07/09 23:34
129	EL.080709.234120	L09070681-14	MW5A-239-20	40/100	1		08/07/09 23:41
130	EL.080709.234739	L09070681-19	OW1A-239-20	40/100	1		08/07/09 23:47
131	EL.080709.235358	L09070681-22	MW2B-239-14	40/100	1		08/07/09 23:53
132	EL.080809.000016	L09070681-34	MW3A-239-14	40/100	1		08/08/09 00:00
133	EL.080809.000632	L09070681-37	MW3B-239-14	40/100	1		08/08/09 00:06
134	EL.080809.001249	L09070681-40	MW3C-239-14	40/100	1		08/08/09 00:12
135	EL.080809.001906	L09070681-43	MW3C2-389-14	40/100	1		08/08/09 00:19
136	EL.080809.002523	L09070681-46	MW4B-239-14	40/100	1		08/08/09 00:25
137	EL.080809.003141	L09070681-49	MW4C-239-14	40/100	1		08/08/09 00:31
138	EL.080809.003759	L09070681-52	OW1B-239-14	40/100	1		08/08/09 00:37
139	EL.080809.004436	WG309258-39	CCV		1		08/08/09 00:44
140	EL.080809.005130	WG309258-40	CCB		1		08/08/09 00:51
141	EL.080809.005806	L09070681-59	OW2A-239-20	40/100	1		08/08/09 00:58
142	EL.080809.010425	L09070681-64	OW3A-239-20	40/100	1		08/08/09 01:04
143	EL.080809.011044	L09070709-36	ORG-S01-239-14	40/100	1		08/08/09 01:10
144	EL.080809.011703	L09070709-38	ORG-S02-239-14	40/100	1		08/08/09 01:17
145	EL.080809.012341	WG309258-41	CCV		1		08/08/09 01:23
146	EL.080809.013035	WG309258-42	CCB		1		08/08/09 01:30

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Sheri L. Babgard

Microbac

Microbac Laboratories Inc.

Data Checklist

Date: 07-AUG-2009
Analyst: JYH
Analyst: NA
Method: 6020
Instrument: ELAN
Curve Workgroup: 309258
Runlog ID: 29521
Analytical Workgroups: 309144,309201,309217,309263,309040,308782,309275,309276

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	X
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	005,106,127,081,124,143,202,049
	545,681,709,652
Client Forms	X
Level X	
Level 3	106,143,202
Level 4	127,081,049,652,
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	SLP
Comments	

Primary Reviewer:

Secondary Reviewer:
10-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-10-2009 13:03:44

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00082690

Analytical Method: 6020 AAB#: WG309201

Login Number: L09080106

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRCSFL04	01	08/05/09					08/07/09	1.7	180		08/07/09	1.9	180	
PRCSWDF	02	08/05/09					08/07/09	1.7	180		08/07/09	2	180	
PRCSWDF	02	08/05/09					08/07/09	1.7	180		08/07/09	1.9	180	
PRCL01	03	08/05/09					08/07/09	1.7	180		08/07/09	1.9	180	
PRCSWDF-MS	04	08/05/09					08/07/09	1.7	180		08/07/09	1.9	180	
PRCSWDF-MS	04	08/05/09					08/07/09	1.7	180		08/07/09	2	180	
PRCSWDF-MSD	05	08/05/09					08/07/09	1.7	180		08/07/09	1.9	180	
PRCSWDF-MSD	05	08/05/09					08/07/09	1.7	180		08/07/09	2	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1461161
Report generated 08/07/2009 13:35

METHOD BLANK SUMMARY

Login Number: L09080106
Work Group: WG309201
Blank File ID: EL.080709.112330
Blank Sample ID: WG309183-02
Prep Date: 08/07/09 06:33
Instrument ID: ELAN-ICP
Analyzed Date: 08/07/09 11:23
Method: 6020
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309183-03	EL.080709.114332	08/07/09 11:43	01
PRCSFL04	L09080106-01	EL.080709.115022	08/07/09 11:50	01
PRCSWDF	L09080106-02	EL.080709.115636	08/07/09 11:56	01
PRCSWDF-MS	L09080106-04	EL.080709.120250	08/07/09 12:02	01
PRCSWDF-MSD	L09080106-05	EL.080709.120905	08/07/09 12:09	01
PRCL01	L09080106-03	EL.080709.121520	08/07/09 12:15	01
PRCSWDF	L09080106-02	EL.080709.125601	08/07/09 12:56	DL01
PRCSWDF-MS	L09080106-04	EL.080709.130216	08/07/09 13:02	DL01
PRCSWDF-MSD	L09080106-05	EL.080709.130830	08/07/09 13:08	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1461162
Report generated 08/07/2009 13:36

Microbac Laboratories Inc.

METHOD BLANK REPORT

00082692

Login Number:L09080106 Prep Date:08/07/09 06:33 Sample ID:WG309183-02
Instrument ID:ELAN-ICP Run Date:08/07/09 11:23 Prep Method:3051
File ID:EL.080709.112330 Analyst:JYH Method:6020
Workgroup (AAB#):WG309201 Matrix:Soil Units:mg/kg
Contract #:DACA56-94-D-0020 Cal ID:ELAN-I-07-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Arsenic, Total	0.0750	0.300	0.0750	1	U
Lead, Total	0.100	0.200	0.100	1	U
Selenium, Total	0.100	0.200	0.100	1	U
Thallium, Total	0.0100	0.0200	0.0100	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1461163
07-AUG-2009 13:36

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00082693

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309183-03
Instrument ID: ELAN-ICP Run Time: 11:43 Prep Method: 3051
File ID: EL.080709.114332 Analyst: JYH Method: 6020
Workgroup (AAB#): WG309201 Matrix: Soil Units: mg/kg
QC Key: STD Lot#: STD33694 Cal ID: ELAN-I-07-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Arsenic, Total	10.0	10.0	100	80 - 120	
Lead, Total	10.0	10.9	109	80 - 120	
Selenium, Total	10.0	10.7	107	80 - 120	
Thallium, Total	10.0	10.7	107	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1461164
Report generated: 08/07/2009 13:36

Microbac Laboratories Inc.

MS/MSD REPORT

00082694

Loginnum:L09080106 Cal ID: ELAN-ICP- 07-AUG-09 Worknum:WG309201

Instrument ID:ELAN-ICP Contract #:DACA56-94-D-0020 Prep Method:3051

Parent ID:L09080106-02 File ID:EL.080709.125601 Dil:10 Method:6020

Sample ID:L09080106-04 MS File ID:EL.080709.130216 Dil:10 Matrix:Soil

Sample ID:L09080106-05 MSD File ID:EL.080709.130830 Dil:10 Units:mg/kg

Percent Solid:81.9

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Lead, Total	20.1	11.9	61.3	346	11.9	29.9	82.5	68.9	75 - 125	20	*#

* FAILS %REC LIMIT

FAILS RPD LIMIT

MS_MSD - Modified 03/06/2008

PDF File ID: 1461165

Report generated 08/07/2009 13:36

Loginnum:L09080106 Cal ID: ELAN-ICP- Worknum:WG309201
Instrument ID:ELAN-ICP Contract #:DACA56-94-D-0020 Method:6020
Parent ID:WG309183-01 File ID:EL.080709.115636 Dil:1 Matrix:SOLID
Sample ID:WG309183-04 MS File ID:EL.080709.120250 Dil:1 Units:mg/kg
Sample ID:WG309183-05 MSD File ID:EL.080709.120905 Dil:1 Percent Solid:81.9

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Arsenic, Total	2.72	11.9	12.2	79.6	11.9	13.8	93.0	12.4	75 - 125	20	
Selenium, Total	0.241	11.9	9.14	74.8	11.9	10.0	82.1	9.04	75 - 125	20	*
Thallium, Total	0.0739	11.9	11.3	94.1	11.9	11.6	96.5	2.48	75 - 125	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID:1461166
Report generated 08/07/2009 13:35

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00082696

Loginnum:L09080106 Cal ID: ELAN-ICP- Worknum:WG309201

Instrument ID:ELAN-ICP Contract #:DACA56-94-D-0020 Method:6020

Parent ID:WG309183-01 File ID:EL.080709.125601 Dil:10 Matrix:SOLID

Sample ID:WG309183-04 MS File ID:EL.080709.130216 Dil:10 Units:mg/kg

Sample ID:WG309183-05 MSD File ID:EL.080709.130830 Dil:10 Percent Solid:81.9

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Lead, Total	20.1	11.9	61.3	346	11.9	29.9	82.5	68.9	75 - 125	20	*#

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008

PDF File ID:1461166

Report generated 08/07/2009 13:35

Microbac Laboratories Inc.
Serial Dilution Report

Login: L09080106 **Worknum:** WG309201
Instrument: ELAN-ICP **Method:** 6020
Serial Dil: WG309201-02 **File ID:** EL.080709.122752 **Dil:** 5 **Units:** ug/L
Sample: L09080106-03 **File ID:** EL.080709.121520 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Arsenic	19		21.25		11.80	E
Lead	6.07	X	6.55	X	7.91	
Selenium	.445	F	ND	U		
Thallium	.0627	X	.1275	F	103.00	

U = Result is below MDL.
F = Result is greater than or equal to MDL and less than the RL.
X = Result is greater than or equal to RL and less than 100 times the MDL.
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 100 times the MDL.

SERIAL_DIL - Modified 09/22/2008
PDF File ID: 1461159
08/07/2009 13:36

Sample Login ID: L09080106 **Worknum:** WG309201
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG309201-01 **File ID:** EL.080709.122136 **Dil:** 1 **Units:** ug/L
Sample ID: L09080106-03 **File ID:** EL.080709.121520 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ARSENIC	66.0		19.0		50	94.0	75 - 125	
LEAD	60.2		6.07		50	108.3	75 - 125	
SELENIUM	45.7		0.445		50	90.5	75 - 125	
THALLIUM	53.7		0.0627		50	107.2	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1461160
Report generated: 08/07/2009 13:36

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	**L09080106**	Workgroup (AAB#):	**WG309201**
Analytical Method:	**6020**	Instrument ID:	**ELAN-ICP**
ICAL Worknum:	**WG309258**	Initial Calibration Date:	**07-AUG-2009 10:16**

	WG309258-01		WG309258-02		WG309258-03		WG309258-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ARSENIC	0	-193	.4	422	50	78500	100	157000	.999938	
LEAD	0	395	.4	13100	50	1610000	100	3180000	1	
SELENIUM	0	14.5	.4	67.1	50	7230	100	14400	.999965	
THALLIUM	0	31.3	.4	3790	50	476000	100	949000	.999994	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

INT_CAL_ICP - Modified 03/06/2008
PDF File ID: 1461170
Report generated: 07-AUG-2009 13:36

Login Number: L09080106 | Run Date: 08/07/2009 | Sample ID: WG309258-06
Instrument ID: ELAN-ICP | Run Time: 10:29 | Method: 6020
File ID: EL.080709.102904 | Analyst: JYH | Units: ug/L
Workgroup (AAB#): WG309201 | Cal ID: ELAN-ICP - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.1875	.75	.1875	U
LEAD	.25	.5	.25	U
SELENIUM	.25	.5	.25	U
THALLIUM	.025	.05	.025	U

ICB - Modified 07/14/2009
PDF File ID: 1461172
Report generated 08/07/2009 13:36

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082701

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309258-12
Instrument ID: ELAN-ICP Run Time: 11:10 Method: 6020
File ID: EL.080709.111044 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG309201 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.188	0.750	0.188	U
Lead	0.250	0.500	0.250	U
Selenium	0.250	0.500	0.250	U
Thallium	0.0250	0.0500	0.0250	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461175
Report generated 08/07/2009 13:36

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082702

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309258-14
Instrument ID: ELAN-ICP Run Time: 11:36 Method: 6020
File ID: EL.080709.113659 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG309201 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.188	0.750	0.188	U
Lead	0.250	0.500	0.250	U
Selenium	0.250	0.500	0.250	U
Thallium	0.0250	0.0500	0.0250	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461175
Report generated 08/07/2009 13:36

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082703

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309258-16
Instrument ID: ELAN-ICP Run Time: 12:47 Method: 6020
File ID: EL.080709.124738 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG309201 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.188	0.750	0.188	U
Lead	0.250	0.500	0.250	U
Selenium	0.250	0.500	0.250	U
Thallium	0.0250	0.0500	0.0250	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461175
Report generated 08/07/2009 13:36

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082704

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309258-18
Instrument ID: ELAN-ICP Run Time: 13:22 Method: 6020
File ID: EL.080709.132200 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG309201 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.188	0.750	0.188	U
Lead	0.250	0.500	0.250	U
Selenium	0.250	0.500	0.250	U
Thallium	0.0250	0.0500	0.0250	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461175
Report generated 08/07/2009 13:36

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00082705

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309258-05
Instrument ID: ELAN-ICP Run Time: 10:22 Method: 6020
File ID: EL.080709.102210 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG309201 Cal ID: ELAN-I - 07-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Arsenic		50	48.4	96.8	90 - 110	
Lead		50	47.9	95.8	90 - 110	
Selenium		50	49.7	99.4	90 - 110	
Thallium		50	47.9	95.7	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1461171
Report generated 08/07/2009 13:36

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082706

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309258-11
Instrument ID: ELAN-ICP Run Time: 11:03 Method: 6020
File ID: EL.080709.110350 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG309201 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		50.0	48.5	ug/L	96.9	90 - 110		
Lead		50.0	48.8	ug/L	97.6	90 - 110		
Selenium		50.0	49.7	ug/L	99.4	90 - 110		
Thallium		50.0	49.1	ug/L	98.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1461174
Report generated 08/07/2009 13:36

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082707

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309258-13
Instrument ID: ELAN-ICP Run Time: 11:30 Method: 6020
File ID: EL.080709.113005 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG309201 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		50.0	48.8	ug/L	97.6	90 - 110		
Lead		50.0	50.4	ug/L	101	90 - 110		
Selenium		50.0	50.4	ug/L	101	90 - 110		
Thallium		50.0	49.6	ug/L	99.1	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1461174
Report generated 08/07/2009 13:36

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00082708

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309258-15

Instrument ID: ELAN-ICP Run Time: 12:40 Method: 6020

File ID: EL.080709.124044 Analyst: JYH QC Key: STD

Workgroup (AAB#): WG309201 Cal ID: ELAN-I - 07-AUG-09

Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		50.0	49.8	ug/L	99.5	90 - 110		
Lead		50.0	49.1	ug/L	98.2	90 - 110		
Selenium		50.0	50.6	ug/L	101	90 - 110		
Thallium		50.0	48.2	ug/L	96.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1461174

Report generated 08/07/2009 13:36

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082709

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309258-17
Instrument ID: ELAN-ICP Run Time: 13:15 Method: 6020
File ID: EL.080709.131506 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG309201 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		50.0	46.2	ug/L	92.4	90 - 110		
Lead		50.0	49.5	ug/L	98.9	90 - 110		
Selenium		50.0	46.6	ug/L	93.2	90 - 110		
Thallium		50.0	49.1	ug/L	98.3	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1461174
Report generated 08/07/2009 13:36

Login number: L09080106 **Workgroup (AAB#):** WG309201
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG309258-09 **File ID:** EL.080709.104957 **Units:** ug/L
Sol. AB : WG309258-10 **File ID:** EL.080709.105654 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Arsenic	NS	0.0337	NS	100	96.8	96.8	
Lead	NS	0.0214	NS	100	97.7	97.7	
Selenium	NS	-0.0340	NS	100	98.3	98.3	
Thallium	NS	0.00720	NS	100	97.7	97.7	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309258-07
Instrument ID: ELAN-ICP Run Time: 10:36 Prep Method: 3051
File ID: EL.080709.103600 Analyst: JYH Method: 6020
Workgroup (AAB#): WG309258 Matrix: Soil Units: ug/L
Contract #: DACA56-94-D-0020 Cal ID: ELAN-ICP-07-AUG-2009 10:16

Analytes	Expected	Found	% Rec	Limits	Q
Thallium, Total	0.0500	0.0645	129	50 - 150	

CRI - Modified 03/06/2008
PDF File ID: 1461168
Report generated 08/07/2009 13:36

INTERNAL STANDARD REPORT

Login: L09080106 **Analytical Method:** 6020
Analytical Workgroup: WG309201 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** JYH
ICAL Date: 07-AUG-2009 09:59

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L09080106-01	SAMP	07-AUG-2009 11:50	115.902	103.332	99.579	103.985
L09080106-02	SAMP	07-AUG-2009 11:56	108.281	103.621	99.533	100.036
L09080106-02	SAMP	07-AUG-2009 12:56	95.062	100.317	97.861	94.789
L09080106-03	SAMP	07-AUG-2009 12:15	104.103	103.301	99.486	100.603
L09080106-04	SAMP	07-AUG-2009 12:02	106.137	103.897	99.78	99.717
L09080106-04	SAMP	07-AUG-2009 13:02	91.065	99.956	94.61	90.978
L09080106-05	SAMP	07-AUG-2009 12:09	105.583	102.04	98.937	100.14
L09080106-05	SAMP	07-AUG-2009 13:08	96.647	99.548	96.013	92.713
WG309183-01	REF	07-AUG-2009 11:56	108.281	103.621	99.533	100.036
WG309183-01	REF	07-AUG-2009 12:56	95.062	100.317	97.861	94.789
WG309183-02	BLANK	07-AUG-2009 11:23	91.387	95.383	93.619	91.748
WG309183-03	LCS	07-AUG-2009 11:43	90.313	97.95	93.842	90.482
WG309183-04	MS	07-AUG-2009 12:02	106.137	103.897	99.78	99.717
WG309183-04	MS	07-AUG-2009 13:02	91.065	99.956	94.61	90.978
WG309183-05	MSD	07-AUG-2009 12:09	105.583	102.04	98.937	100.14
WG309183-05	MSD	07-AUG-2009 13:08	96.647	99.548	96.013	92.713
WG309201-01	PSPK	07-AUG-2009 12:21	101.459	106.855	99.266	97.216
WG309201-02	SERIAL	07-AUG-2009 12:27	97.185	98.795	95.404	92.397
WG309258-05	ICV	07-AUG-2009 10:22	104.802	101.158	98.796	99.594
WG309258-06	ICB	07-AUG-2009 10:29	102.892	102.581	100.157	96.579
WG309258-11	CCV	07-AUG-2009 11:03	101.579	97.834	95.599	95.853
WG309258-12	CCB	07-AUG-2009 11:10	99.561	97.94	97.884	96.474
WG309258-13	CCV	07-AUG-2009 11:30	101.183	97.863	95.541	94.684
WG309258-14	CCB	07-AUG-2009 11:36	102.344	100.619	96.927	97.409
WG309258-15	CCV	07-AUG-2009 12:40	100.796	100.028	98.755	97.876
WG309258-16	CCB	07-AUG-2009 12:47	96.466	101.797	99.262	95.567
WG309258-17	CCV	07-AUG-2009 13:15	103.766	107.367	97.752	94.454
WG309258-18	CCB	07-AUG-2009 13:22	101.929	104.014	102.128	97.725

Acceptance criteria: 30% - 120%
Underlined recoveries are out of range

INT_STD_ICPMS - Modified 03/05/2008
PDF File ID: 1461169
Report generated: 08/07/2009 13:36

Login Number: L09080106 **Date:** 06/08/2009
Insturment ID: ELAN-ICP **Method:** 6020

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Antimony	1.00	100.0
Arsenic	1.00	100.0
Barium	1.00	100.0
Cadmium	1.00	100.0
Chromium	1.00	100.0
Cobalt	1.00	100.0
Copper	1.00	100.0
Lead	1.00	100.0
Manganese	1.00	100.0
Nickel	1.00	100.0
Selenium	1.00	100.0
Silver	1.00	100.0
Thallium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1461167
Report generated: 08/07/2009 13:36

Login Number: L09080106 **Date:** 06/17/2009
Insturment ID: ELAN-ICP **Method:** 6020

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Uranium	1.00	100.0

Comments:
All analytes passed acceptance criteria at the specified concentration.

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1461167
Report generated: 08/07/2009 13:36

2.3.3 Metals CVAA Data (Mercury)

2.3.3.1 Summary Data

LABORATORY REPORT

00082717

L09080106

08/11/09 16:16

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRCL01	L09080106-03	7471A	1	06-AUG-09

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082718

Sample Number:	L09080106-03	PrePrep Method:	NONE	Instrument:	HYDRA
Client ID:	PRCL01	Prep Method:	7471A	Prep Date:	08/07/2009 06:35
Matrix:	Soil	Analytical Method:	7471A	Cal Date:	08/07/2009 09:34
Workgroup Number:	WG309216	Analyst:	PDM	Run Date:	08/07/2009 09:55
Collect Date:	08/05/2009 13:30	Dilution:	1	File ID:	HY.080709.095522
Sample Tag:	01	Units:	mg/kg	Percent Solid:	81.8

Analyte	CAS. Number	Result	Qual	PQL	SDL
Mercury, Total	7439-97-6		U	0.288	0.0115

U Not detected at or above adjusted sample detection limit

2.3.3.2 QC Summary Data

Example Cold Vapor Mercury Calculations
Hydra AA Mercury Analyzer

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and five standards.

2.0 Calculating the concentration (C) of an element in water using data from run log and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to Volume (mL)	40
Vi = Aliquot Volume (mL)	40
D = Manual dilution factor, if required (10X = 10)	1
Cx = Concentration of element in ppb (ug/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Ws} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to volume (mL)	40
Ws = Aliquot weight (g)	0.6
D = Manual dilution factor	1
Cx = Concentration of element in ug/kg	6.67

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

1 Cx = Concentration calculated as received (wet basis)	6.67
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (ug/kg)	8.33

8.33 ug/kg = 0.00833 mg/kg

Microbac Laboratories Inc.
Metals Digest Log

00082721

Workgroup: WG309184
Analyst: REK
Spike Analyst: REK
Method: 7471A
Run Date: 08/07/2009 06:35
Hotblock Start Temp: 96 @ 06:45
Hotblock End Temp: 97 @ 07:15

SOP: ME405 Revison 9
Spike Solution: STD34527
Spike Witness: VC
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013
HCL Lot #: COA14028
KMnO4 1:1 Lot #: RGT13913
HG SOIL STD 10PPM Lot #: STD34534
HG SOILS ICV Lot #: STD34535

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Spike Amount	Due Date
1	WG309184-02	BLANK	7	.6 g	40 mL		
2	WG309184-03	LCS	7	.6 g	40 mL	4 mL	
3	WG309184-01	REF	7	.636 g	40 mL		
4	L09080106-03	SAMP	7	.636 g	40 mL		08/07/09
5	WG309184-04	MS	7	.636 g	40 mL	4 mL	
6	WG309184-05	MSD	7	.636 g	40 mL	4 mL	

Analyst: 

Reviewer: 

BLOCK_DIG - Modified 07/22/2008
PDF ID: 1460063
Report generated: 08/07/2009 07:40

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HYDRA Dataset: 080709A.PRN
Analyst1: PDM Analyst2: N/A
Method: 7471A SOP: ME405 Rev: 9
Maintenance Log ID: 29707

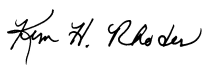
Calibration Std: STD34534 ICV/CCV Std: STD34535 Post Spike: STD34537
ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 309216

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.080709.093259	WG309234-01	Calibration Point		1		08/07/09 09:32
2	HY.080709.093443	WG309234-02	Calibration Point		1		08/07/09 09:34
3	HY.080709.093625	WG309234-03	Calibration Point		1		08/07/09 09:36
4	HY.080709.093829	WG309234-04	Calibration Point		1		08/07/09 09:38
5	HY.080709.094027	WG309234-05	Calibration Point		1		08/07/09 09:40
6	HY.080709.094209	WG309234-06	Calibration Point		1		08/07/09 09:42
7	HY.080709.094423	WG309234-07	Initial Calibration Verification		1		08/07/09 09:44
8	HY.080709.094604	WG309234-08	Initial Calib Blank		1		08/07/09 09:46
9	HY.080709.094751	WG309234-09	CCV		1		08/07/09 09:47
10	HY.080709.094956	WG309234-10	CCB		1		08/07/09 09:49
11	HY.080709.095137	WG309184-02	Method/Prep Blank	.6/40	1		08/07/09 09:51
12	HY.080709.095319	WG309184-03	Laboratory Control S	.6/40	1		08/07/09 09:53
13	HY.080709.095522	L09080106-03	PRCL01	.636/40	1	WG309184-01	08/07/09 09:55
14	HY.080709.095724	WG309216-01	Post Digestion Spike		1	L09080106-03	08/07/09 09:57
15	HY.080709.095927	WG309184-04	Matrix Spike	.636/40	1	L09080106-03	08/07/09 09:59
16	HY.080709.100141	WG309184-05	Matrix Spike Duplica	.636/40	1	L09080106-03	08/07/09 10:01
17	HY.080709.100328	WG309234-11	CCV		1		08/07/09 10:03
18	HY.080709.100511	WG309234-12	CCB		1		08/07/09 10:05

Page: 1 Approved: August 07, 2009



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Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00082723

Analytical Method: 7471A AAB#: WG309216

Login Number: L09080106

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRCL01	03	08/05/09					08/07/09	1.7	28		08/07/09	1.9	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1460706
Report generated 08/07/2009 10:13

METHOD BLANK SUMMARY

Login Number:	L09080106	Work Group:	WG309216
Blank File ID:	HY.080709.095137	Blank Sample ID:	WG309184-02
Prep Date:	08/07/09 06:35	Instrument ID:	HYDRA
Analyzed Date:	08/07/09 09:51	Method:	7471A
Analyst:	PDM		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309184-03	HY.080709.095319	08/07/09 09:53	01
PRCL01	L09080106-03	HY.080709.095522	08/07/09 09:55	01

Report Name: BLANK_SUMMARY
PDF File ID: 1460707
Report generated 08/07/2009 10:13

Microbac Laboratories Inc.

METHOD BLANK REPORT

00082725

Login Number: L09080106 Prep Date: 08/07/09 06:35 Sample ID: WG309184-02
Instrument ID: HYDRA Run Date: 08/07/09 09:51 Prep Method: 7471A
File ID: HY.080709.095137 Analyst: PDM Method: 7471A
Workgroup (AAB#): WG309216 Matrix: Soil Units: mg/kg
Contract #: DACA56-94-D-0020 Cal ID: HYDRA-07-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury, Total	0.0100	0.250	0.0100	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1460708
07-AUG-2009 10:13

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00082726

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309184-03
Instrument ID: HYDRA Run Time: 09:53 Prep Method: 7471A
File ID: HY.080709.095319 Analyst: PDM Method: 7471A
Workgroup (AAB#): WG309216 Matrix: Soil Units: mg/kg
QC Key: STD Lot#: STD34527 Cal ID: HYDRA-07-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury, Total	0.267	0.275	103	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1460709
Report generated: 08/07/2009 10:13

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00082727

Loginnum:L09080106 Cal ID:HYDRA- Worknum:WG309216
Instrument ID:HYDRA Contract #:DACA56-94-D-0020 Method:7471A
Parent ID:WG309184-01 File ID:HY.080709.095522 Dil:1 Matrix:SOLID
Sample ID:WG309184-04 MS File ID:HY.080709.095927 Dil:1 Units:mg/kg
Sample ID:WG309184-05 MSD File ID:HY.080709.100141 Dil:1 Percent Solid:81.8

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury, Total	ND	0.308	0.280	91.0	0.308	0.271	88.0	3.35	75 - 125	25	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID:1460710
Report generated 08/11/2009 16:02

Sample Login ID: L09080106 **Worknum:** WG309216
Instrument ID: HYDRA **Method:** 7471A
Post Spike ID: WG309216-01 **File ID:** HY.080709.095724 **Dil:** 1 **Units:** ug/L
Sample ID: L09080106-03 **File ID:** HY.080709.095522 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	1.03	F	0	U	1	103.0	85 - 115	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1460705
Report generated: 08/07/2009 10:13

Login Number: L09080106
Analytical Method: 7471A
ICAL Worknum: WG309234

Workgroup (AAB#): WG309216
Instrument ID: HYDRA
Initial Calibration Date: 08/07/2009 09:42

Analyte	WG309234-01		WG309234-02		WG309234-03		WG309234-04		WG309234-05		WG309234-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	-8	0.200	883	1.00	3793	2.00	7485	5.00	18065	10.0	36611

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1460711
Report generated 08/07/2009 10:13

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00082730

Login Number: L09080106
Analytical Method: 7471A
ICAL Worknum: WG309234

Workgroup (AAB#): WG309216
Instrument ID: HYDRA
Initial Calibration Date: 08/07/2009 09:42

Analyte	R	Q
Mercury	1.000	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1460711
Report generated 08/07/2009 10:13

Login Number: L09080106
Instrument ID: HYDRA
File ID: HY.080709.094604
Workgroup (AAB#): WG309216
Matrix: SOIL

Run Date: 08/07/2009
Run Time: 09:46
Analyst: PDM
Cal ID: HYDRA - 07-AUG-09

Sample ID: WG309234-08
Method: 7471A
Units: ug/L

Analytes	MDL	RDL	Concentration	Qualifier
MERCURY	.15	3.75	.15	U

ICB - Modified 07/14/2009
PDF File ID: 1460713
Report generated 08/07/2009 10:13

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082732

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309234-10
Instrument ID: HYDRA Run Time: 09:49 Method: 7471A
File ID: HY.080709.094956 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309216 Cal ID: HYDRA - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	3.75	0.150	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1460715
Report generated 08/07/2009 10:13

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082733

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309234-12
Instrument ID: HYDRA Run Time: 10:05 Method: 7471A
File ID: HY.080709.100511 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309216 Cal ID: HYDRA - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.150	3.75	0.150	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1460715
Report generated 08/07/2009 10:13

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00082734

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309234-07
Instrument ID: HYDRA Run Time: 09:44 Method: 7471A
File ID: HY.080709.094423 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309216 Cal ID: HYDRA - 07-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Mercury		2	2.01	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1460712
Report generated 08/07/2009 10:13

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082735

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309234-09
Instrument ID: HYDRA Run Time: 09:47 Method: 7471A
File ID: HY.080709.094751 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309216 Cal ID: HYDRA - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00196	mg/L	98.0	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1460714
Report generated 08/07/2009 10:13

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082736

Login Number: L09080106 Run Date: 08/07/2009 Sample ID: WG309234-11
Instrument ID: HYDRA Run Time: 10:03 Method: 7471A
File ID: HY.080709.100328 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309216 Cal ID: HYDRA - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00204	mg/L	102	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1460714
Report generated 08/07/2009 10:13

2.4 General Chemistry Data

2.4.1 Percent Solids Data

2.4.1.1 Raw Data

LABORATORY REPORT

00082740

L09080106

08/11/09 16:16

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRCSFL04	L09080106-01	D2216-90	1	06-AUG-09
PRCSWDF	L09080106-02	D2216-90	1	06-AUG-09
PRCL01	L09080106-03	D2216-90	1	06-AUG-09
PRCSWDF-MS	L09080106-04	D2216-90	1	06-AUG-09
PRCSWDF-MSD	L09080106-05	D2216-90	1	06-AUG-09

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082741

Sample Number:	L09080106-01	PrePrep Method:	NONE	Instrument:	BAL001
Client ID:	PRCSFL04	Prep Method:	D2216-90	Prep Date:	08/07/2009 08:39
Matrix:	Soil	Analytical Method:	D2216-90	Cal Date:	
Workgroup Number:	WG309174	Analyst:	JDH	Run Date:	08/07/2009 08:39
Collect Date:	08/05/2009 13:45	Dilution:	1	File ID:	B1.309174-0135
Sample Tag:	01	Units:	weight %		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	83.8		1.00	1.00

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082742

Sample Number: **L09080106-02**
Client ID: **PRCSWDF**
Matrix: **Soil**
Workgroup Number: **WG309174**
Collect Date: **08/05/2009 13:40**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **JDH**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/07/2009 08:39**
Cal Date:
Run Date: **08/07/2009 08:39**
File ID: **B1.309174-0136**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**81.9**		**1.00**	**1.00**

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082743

Sample Number:	L09080106-03	PrePrep Method:	NONE	Instrument:	BAL001
Client ID:	PRCL01	Prep Method:	D2216-90	Prep Date:	08/07/2009 08:39
Matrix:	Soil	Analytical Method:	D2216-90	Cal Date:	
Workgroup Number:	WG309174	Analyst:	JDH	Run Date:	08/07/2009 08:39
Collect Date:	08/05/2009 13:30	Dilution:	1	File ID:	B1.309174-0137
Sample Tag:	01	Units:	weight %		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	81.8		1.00	1.00

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082744

Sample Number:	L09080106-04	PrePrep Method:	NONE	Instrument:	BAL001
Client ID:	PRCSWDF-MS	Prep Method:	D2216-90	Prep Date:	08/07/2009 08:39
Matrix:	Soil	Analytical Method:	D2216-90	Cal Date:	
Workgroup Number:	WG309174	Analyst:	JDH	Run Date:	08/07/2009 08:39
Collect Date:	08/05/2009 13:40	Dilution:	1	File ID:	B1.309174-0138
Sample Tag:	01	Units:	weight %		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	81.9		1.00	1.00

Report Number: **L09080106**
Report Date : **August 11, 2009**

00082745

Sample Number:	**L09080106-05**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**PRCSWDF-MSD**	Prep Method:	**D2216-90**	Prep Date:	**08/07/2009 08:39**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG309174**	Analyst:	**JDH**	Run Date:	**08/07/2009 08:39**
Collect Date:	**08/05/2009 13:40**	Dilution:	**1**	File ID:	**B1.309174-0139**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**81.9**		**1.00**	**1.00**

Example Percent Solids Calculations

1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:	
WT1 = Weight, in grams, of the empty container	1.30 g
WT2 = Weight, in grams, of the container and wet sample	21.274 g
WT3 = Weight, in grams, of the container and dried sample	5.21 g
F = Factor to get units as percent weight	100
%Solids = Percent solids present in sample.	19.58%

2.0 Calculating the percent moisture of a sample.

% Moisture = 100 - % Solids from 1.0 calculation

PERCENT SOLIDS

00082747

Workgroup (AAB#):WG309174 Analyst:JDH ADT(on):08/06/2009 15:54

Method:D2216-90 Instrument:BAL001 ADT(off):08/07/2009 08:39

SOP:K0003 Rev:9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09070709-01	1.33	16.42	12.36			73.09	
L09070709-02	1.34	20.81	15.84			74.47	
L09070709-03	1.32	22.52	15.65			67.59	
L09070709-04	1.34	15.76	14.02			87.93	
L09070709-05	1.34	15.3	11.7			74.21	
L09070709-06	1.34	15.3	11.7			74.21	
L09070709-07	1.34	15.3	11.7			74.21	
L09070709-08	1.34	15.8	13.78			86.03	
L09070709-09	1.33	23.98	21.12			87.37	
L09070709-10	1.32	22.88	20.56			89.24	
L09070709-11	1.35	25.33	20.58			80.19	
L09070709-12	1.31	18.89	16.33			85.44	
L09070709-13	1.3	17	12.16			69.17	
L09070709-14	1.31	26.92	24.14			89.14	
L09070709-15	1.29	27.22	21.55			78.13	
L09070709-16	1.32	25.34	21.59			84.39	
L09070709-17	1.32	22.82	20.25			88.05	
L09070709-18	1.32	21.16	16.72			77.62	
L09070709-19	1.33	20.33	17.35			84.32	
L09070709-20	1.3	25.88	22.1			84.62	
L09070709-21	1.3	27.76	24.25			86.73	
L09070709-22	1.31	23.74	20.88			87.25	
L09070709-23	1.31	23.74	20.88			87.25	
L09070709-24	1.31	23.74	20.88			87.25	
L09070709-25	1.32	17.53	15.36			86.61	
L09070709-26	1.32	18.4	16.09			86.48	
L09070709-27	1.31	16.5	14.62			87.62	
L09070709-28	1.33	24.32	20.63			83.95	
L09070709-29	1.31	27.82	23.92			85.29	
L09070709-30	1.3	27.85	24.75			88.32	
L09070709-31	1.32	25.66	21.9			84.55	
L09070709-32	1.32	23.86	20.02			82.96	
L09070709-33	1.31	24.8	20.49			81.65	
L09070709-34	1.33	22.76	17.95			77.55	
L09080106-01	1.3	29.62	25.02			83.76	
L09080106-02	1.31	32.43	26.8			81.91	
L09080106-03	1.31	26.72	22.09			81.78	
L09080106-04	1.31	32.43	26.8			81.91	
L09080106-05	1.31	32.43	26.8			81.91	
L09080107-01	1.34	28.06	23.99			84.77	
L09080107-02	1.35	27.6	22.5			80.57	
L09080107-03	1.32	33.99	27.94			81.48	

PERCENT_SOLIDS - Modified 04/24/2008

PDF ID: 1459999

Report generated: 08/07/2009 08:56

Microbac Laboratories Inc.

PERCENT SOLIDS

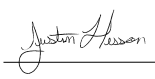
00082748

Workgroup (AAB#): WG309174 Analyst: JDH ADT(on): 08/06/2009 15:54

Method: D2216-90 Instrument: BAL001 ADT(off): 08/07/2009 08:39

SOP: K0003 Rev: 9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09080107-04	1.32	38.4	32.15			83.14	
L09080107-05	1.32	32.99	28			84.24	
L09080127-01	1.32	12.37	4.76			31.13	
L09080128-01	1.3	28.29	21.89			76.29	
L09080128-02	1.3	28.29	21.89			76.29	
L09080128-03	1.3	28.29	21.89			76.29	
L09080128-04	1.31	26.74	19.35			70.94	
L09080128-05	1.31	27.4	19.64			70.26	
L09080128-06	1.32	19.16	14.74			75.22	
L09080128-07	1.32	18.28	11.97			62.79	
L09080128-08	1.3	19.38	12.59			62.44	
L09080130-06	1.32	36.91	32.88			88.68	
L09080130-07	1.32	29.75	25.48			84.98	
L09080130-08	1.32	34.01	28.22			82.29	
WG309174-01	1.3	25.88	22.1			84.62	15.38
WG309174-02	1.34	28.06	23.99			84.77	15.23
WG309174-03	1.32	34.01	28.22			82.29	17.71
WG309174-04	1.32	15.58	13.47			85.20	14.80
WG309174-05	1.25	24.28	20.99			85.71	14.29
WG309174-06	1.28	27.1	22.67			82.84	17.16

Analyst: 

PERCENT_SOLIDS - Modified 04/24/2008

PDF ID: 1459999

Report generated: 08/07/2009 08:56

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
August 11, 2009

ADC – ANTHONY D. CANTER	AJF – AMANDA J. FICKIESEN	AJM – ANTHONY J. MOSSBURG
ALB – ANNIE L. BROWN	AML – ANTHONY M. LONG	BLG – BRENDA L. GREENWALT
BRG – BRENDA R. GREGORY	CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS
CAH – CHARLES A. HALL	CEB – CHAD E. BARNES	CLC – CHRYS L. CRAWFORD
CLW – CHARISSA L. WINTERS	CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
DDE – DEBRA D. ELLIOTT	DEL – DON E. LIGHTFRITZ	DEV – DAVID E. VANDENBERG
DGB – DOUGLAS G. BUTCHER	DIH – DEANNA I. HESSON	DLB – DAVID L. BUMGARNER
DLP – DOROTHY L. PAYNE	DLR – DIANNA L. RAUCH	DR – DEANNA ROBERTS
ECL – ERIC C. LAWSON	EDA – ERIN D. AGEE	ERP – ERIN R. PORTER
FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR	HJR – HOLLY J. REED
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON	JKT – JANE K. THOMPSON
JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES	JYH – JI Y. HU
KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES	KRA – KATHY R. ALBERTSON
LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA	MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING	MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON	NPM – NATHANIEL P. MILLER
PDM – PIERCE D. MORRIS	RAH – ROY A. HALSTEAD	RB – ROBERT BUCHANAN
REK – ROBERT E. KYER	RLK – ROBIN L. KLINGER	RWC – RODNEY W. CAMPBELL
SDH – SHANA D. HINYARD	SLM – STEPHANIE L. MOSSBURG	SLP – SHERI L. PFALZGRAF
TIP – TAE I. PARRISH	TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS
VC – VICKI COLLIER	WTD – WADE T. DELONG	

Qualkey: STD_ND=U

Qualifier	Description
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

COC NO. (DATE-01)

Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Microbac
Address : 158 Starlite Drive, Marietta OH 45750
Contact : Stephanie Mossburg
Phone: 1-800-373-4071

PM: Praveen Svrivastav (713.996.4588) TAT: 24 Hr
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: Pistol Range Site: Confirmation Sampling
Project #: 117591-0009B340 Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713) 247-9292
Sampler Sign:

Sample Number	Grab	Date	Time	Matrix	# of Containers	Lead (6020)	VOCs 8260	SVOCs 8270	TAL METALS						Comments
PRCSFL04	X	8/5/09	13:45	Soil	1	X									24-hour TAT!
PRCSWDF	X	8/5/09	13:46	Soil	1	X									24-hour TAT!
PRCCL01	X	8/5/09	13:30	Soil	1		X								~~STANDARD TAT~~! 24-HOUR TAT!
PRCCL01	X	8/5/09	13:30	Soil	1			X							~~STANDARD TAT~~ 24-HOUR TAT!
PRCCL01	X	8/5/09	13:30	Soil	1				X						~~STANDARD TAT~~ 24-HOUR TAT!
PRCSWDF-MS	X	8/5/09	13:40	Soil	1	X									~~STANDARD TAT~~ 24-HOUR TAT!
PRCSWDF-MSD	X	8/5/09	13:40	Soil	1	X									~~STANDARD TAT~~ 24-HOUR TAT!
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											

Relinquished By: M. Willmore
Date/Time 8/5/09 17:30

Received By:
Date/Time

Special Instructions

Relinquished By:
Date/Time

Received for Laboratory By:
Date/Time

Microbac OVD
Received: 08/06/2009 09:50
By: ERIN PORTER
Erin Porter

221000000938

00082752

COOLER INSPECTION

Received: 08/06/2009 09:50
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09080106

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0010638	H	2.0	1Z66V7250192947684		

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct perservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Internal Chain of Custody Report

Login: L09080106
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 07-AUG-2009

Samplenum	Container ID	Products
L09080106-01	603854	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:13	ERE	
2	PREP	W1	DIG	06-AUG-2009 11:18	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 08:12	JYH	REK
4	STORE	DIG	A1	07-AUG-2009 12:09	RLK	REK

***Sample extract/digestate**

Samplenum	Container ID	Products
L09080106-02	603855	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:13	ERE	
2	PREP	W1	DIG	06-AUG-2009 11:18	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 08:12	JYH	REK
4	STORE	DIG	A1	07-AUG-2009 12:09	RLK	REK

***Sample extract/digestate**

Samplenum	Container ID	Products
L09080106-03	603856	G-60-W

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	V1	06-AUG-2009 11:13	ERE	
2	ANALYZ	V1	ORG4	06-AUG-2009 11:40	TMB	JKT

Samplenum	Container ID	Products
L09080106-03	603857	8270

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:13	ERE	
2	PREP	W1	EXT	06-AUG-2009 11:15	CSH	JKT
3	STORE	EXT	W1	06-AUG-2009 11:56	JKT	CSH
4	ANALYZ*	EXT	SEMI	06-AUG-2009 13:08	CAA	CSH

***Sample extract/digestate**

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L09080106
Account: 2773
Project: 2773.025
Samples: 5
Due Date: 07-AUG-2009

Samplenum	Container ID	Products
L09080106-03	603858	AG AL AS-MS BA BE CA CD CO CR CU DIG-ICP FE HC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:13	ERE	
2	PREP	W1	DIG	06-AUG-2009 11:18	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 08:12	JYH	REK

Sample extract/digestate

Samplenum	Container ID	Products
L09080106-04	603859	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:13	ERE	
2	PREP	W1	DIG	06-AUG-2009 11:18	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 08:12	JYH	REK
4	STORE	DIG	A1	07-AUG-2009 12:09	RLK	REK

Sample extract/digestate

Samplenum	Container ID	Products
L09080106-05	603860	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	06-AUG-2009 11:13	ERE	
2	PREP	W1	DIG	06-AUG-2009 11:18	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 08:12	JYH	REK
4	STORE	DIG	A1	07-AUG-2009 12:09	RLK	REK

Sample extract/digestate

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac®

158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • http://www.microbac.com

Laboratory Report Number: L09080143

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	*Team Chemist/Data Specialist*	kalbertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	smossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	tlong@microbac.com
Amanda Fickiesen	*Client Services Specialist*	afickiesen@microbac.com
Annie Brown	*Client Services Specialist*	abrown@microbac.com

This report was reviewed on August 10, 2009.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on August 10, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 81 pages.

Look closer. Go further. Do more.

Microbac

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

Access and print reports, check the status of your projects, and review electronic data forms online from anywhere with internet access!

View a demo by visiting www.microbac.com and entering the Ohio Valley location
Click on "Online Data Access"
User ID: jdoe@abc.com
Password: demo

Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09080143
PREPARED FOR Shaw E I, Inc.
WORK ID:

1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09080143

CHAIN OF CUSTODY: The chain of custody number was 080609-01

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 2 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 10-AUG-09
Stephanie Mossburg

Laboratory Data Package Cover Page

00082761

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 10, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080143
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309281
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 10, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080143
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309281
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 10, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082766

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

SHERI L. PFALZGRAF	Sheri L. Pfalzgraf	Chemist II	August 10, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080143
Project Name:	798-LONGHORN
Method:	6020
Prep Batch Number(s):	WG309251
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 10, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?		✓			1
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	✓				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080143
Project Name:	798-LONGHORN
Method:	6020
Prep Batch Number(s):	WG309251
Reviewer Name:	SHERI L. PFALZGRAF
LRC Date:	August 10, 2009

EXCEPTIONS REPORT
ER1 - Client samples 04, 07, and 08 required dilution analyses in order to obtain results for lead within the linear range.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Metals Data

2.1.1 Metals ICP-MS Data

2.1.1.1 Summary Data

LABORATORY REPORT

00082774

L09080143

08/10/09 17:04

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRCSFL03	L09080143-01	6020	1	07-AUG-09
PRCSFL03-QC	L09080143-02	6020	1	07-AUG-09
PRCSWBD	L09080143-03	6020	1	07-AUG-09
PRCSFL01	L09080143-04	6020	10	07-AUG-09
PRCSWHB	L09080143-05	6020	1	07-AUG-09
PRCSFL02	L09080143-06	6020	1	07-AUG-09
PRCSWFH	L09080143-07	6020	50	07-AUG-09
PRCSFL05	L09080143-08	6020	10	07-AUG-09

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082775

Sample Number:	**L09080143-01**	PrePrep Method:	**NONE**	Instrument:	**ELAN-ICP**
Client ID:	**PRCSFL03**	Prep Method:	**3051**	Prep Date:	**08/07/2009 12:15**
Matrix:	**Soil**	Analytical Method:	**6020**	Cal Date:	**08/07/2009 10:16**
Workgroup Number:	**WG309263**	Analyst:	**JYH**	Run Date:	**08/07/2009 15:46**
Collect Date:	**08/06/2009 08:30**	Dilution:	**1**	File ID:	**EL.080709.154609**
Sample Tag:	**01**	Units:	**mg/kg**	Percent Solid:	**82.7**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	**7439-92-1**	**6.53**		**0.232**	**0.116**

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082776

Sample Number:	**L09080143-02**	PrePrep Method:	**NONE**	Instrument:	**ELAN-ICP**
Client ID:	**PRCSFL03-QC**	Prep Method:	**3051**	Prep Date:	**08/07/2009 12:15**
Matrix:	**Soil**	Analytical Method:	**6020**	Cal Date:	**08/07/2009 10:16**
Workgroup Number:	**WG309263**	Analyst:	**JYH**	Run Date:	**08/07/2009 15:52**
Collect Date:	**08/06/2009 08:30**	Dilution:	**1**	File ID:	**EL.080709.155224**
Sample Tag:	**01**	Units:	**mg/kg**	Percent Solid:	**84.2**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	**7439-92-1**	**8.70**		**0.222**	**0.111**

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082777

Sample Number:	L09080143-03	PrePrep Method:	NONE	Instrument:	ELAN-ICP
Client ID:	PRCSWBD	Prep Method:	3051	Prep Date:	08/07/2009 12:15
Matrix:	Soil	Analytical Method:	6020	Cal Date:	08/07/2009 10:16
Workgroup Number:	WG309263	Analyst:	JYH	Run Date:	08/07/2009 16:25
Collect Date:	08/06/2009 08:30	Dilution:	1	File ID:	EL.080709.162501
Sample Tag:	01	Units:	mg/kg	Percent Solid:	85.0

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	7439-92-1	14.1		0.214	0.107

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082778

Sample Number:	**L09080143-04**	PrePrep Method:	**NONE**	Instrument:	**ELAN-ICP**
Client ID:	**PRCSFL01**	Prep Method:	**3051**	Prep Date:	**08/07/2009 12:15**
Matrix:	**Soil**	Analytical Method:	**6020**	Cal Date:	**08/07/2009 10:16**
Workgroup Number:	**WG309263**	Analyst:	**JYH**	Run Date:	**08/07/2009 17:15**
Collect Date:	**08/06/2009 08:15**	Dilution:	**10**	File ID:	**EL.080709.171542**
Sample Tag:	**DL01**	Units:	**mg/kg**	Percent Solid:	**88.5**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	**7439-92-1**	**56.0**		**2.16**	**1.08**

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082779

Sample Number:	**L09080143-05**	PrePrep Method:	**NONE**	Instrument:	**ELAN-ICP**
Client ID:	**PRCSWHB**	Prep Method:	**3051**	Prep Date:	**08/07/2009 12:15**
Matrix:	**Soil**	Analytical Method:	**6020**	Cal Date:	**08/07/2009 10:16**
Workgroup Number:	**WG309263**	Analyst:	**JYH**	Run Date:	**08/07/2009 16:37**
Collect Date:	**08/06/2009 12:05**	Dilution:	**1**	File ID:	**EL.080709.163734**
Sample Tag:	**01**	Units:	**mg/kg**	Percent Solid:	**81.9**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	**7439-92-1**	**10.4**		**0.232**	**0.116**

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082780

Sample Number:	**L09080143-06**	PrePrep Method:	**NONE**	Instrument:	**ELAN-ICP**
Client ID:	**PRCSFL02**	Prep Method:	**3051**	Prep Date:	**08/07/2009 12:15**
Matrix:	**Soil**	Analytical Method:	**6020**	Cal Date:	**08/07/2009 10:16**
Workgroup Number:	**WG309263**	Analyst:	**JYH**	Run Date:	**08/07/2009 16:43**
Collect Date:	**08/06/2009 12:00**	Dilution:	**1**	File ID:	**EL.080709.164351**
Sample Tag:	**01**	Units:	**mg/kg**	Percent Solid:	**82.7**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	**7439-92-1**	**16.5**		**0.235**	**0.118**

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082781

Sample Number:	**L09080143-07**	PrePrep Method:	**NONE**	Instrument:	**ELAN-ICP**
Client ID:	**PRCSWFH**	Prep Method:	**3051**	Prep Date:	**08/07/2009 12:15**
Matrix:	**Soil**	Analytical Method:	**6020**	Cal Date:	**08/07/2009 10:16**
Workgroup Number:	**WG309263**	Analyst:	**JYH**	Run Date:	**08/07/2009 17:21**
Collect Date:	**08/06/2009 14:30**	Dilution:	**50**	File ID:	**EL.080709.172157**
Sample Tag:	**DL01**	Units:	**mg/kg**	Percent Solid:	**86.3**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	**7439-92-1**	**607**		**11.6**	**5.78**

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082782

Sample Number:	**L09080143-08**	PrePrep Method:	**NONE**	Instrument:	**ELAN-ICP**
Client ID:	**PRCSFL05**	Prep Method:	**3051**	Prep Date:	**08/07/2009 12:15**
Matrix:	**Soil**	Analytical Method:	**6020**	Cal Date:	**08/07/2009 10:16**
Workgroup Number:	**WG309263**	Analyst:	**JYH**	Run Date:	**08/07/2009 16:56**
Collect Date:	**08/06/2009 14:35**	Dilution:	**10**	File ID:	**EL.080709.165657**
Sample Tag:	**DL01**	Units:	**mg/kg**	Percent Solid:	**80.8**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Lead, Total	**7439-92-1**	**47.3**		**2.43**	**1.22**

2.1.1.2 QC Summary Data

Example 6020 Calculations
Perkin Elmer ELAN 6100

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Final volume	100
Vi = Initial volume	40
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in (ug/L)	0.25

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Final volume	200
Vi = Initial volume	0.5
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in (ug/kg)	40

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	40
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (ug/kg)	50

50 ug/kg = 0.050 mg/kg

Perkin Elmer ELAN ICP/MS

STANDARDS KEY

QC Std 1 - ICV
QC Std 2 - ICB
QC Std 3 - CRI - Soil
QC Std 4 - CRI - Water
QC Std 5 - ICSA
QC Std 6 - ICSAB
QC Std 7 - CCV
QC Std 8 - CCB

Calibration Solutions

Analyte	Stock Conc. (mg/L)	S1 (mg/L)	S2 (mg/L)	S3 (mg/L)	S4 (mg/L)
Al	10	0	0.0004	0.05	0.1
Sb	10	0	0.0004	0.05	0.1
As	10	0	0.0004	0.05	0.1
Ba	10	0	0.0004	0.05	0.1
Be	10	0	0.0004	0.05	0.1
Ca	1000	0	0.04	5	10
Cd	10	0	0.0004	0.05	0.1
Cr	10	0	0.0004	0.05	0.1
Co	10	0	0.0004	0.05	0.1
Cu	10	0	0.0004	0.05	0.1
Fe	1000	0	0.04	5	10
Pb	10	0	0.0004	0.05	0.1
Mg	1000	0	0.04	5	10
Mn	10	0	0.0004	0.05	0.1
Ni	10	0	0.0004	0.05	0.1
K	1000	0	0.04	5	10
Se	10	0	0.0004	0.05	0.1
Ag	10	0	0.0004	0.05	0.1
Na	1000	0	0.04	5	10
Tl	10	0	0.0004	0.05	0.1
V	10	0	0.0004	0.05	0.1
U	1000	0	0.0004	0.05	0.1
Zn	10	0	0.0004	0.05	0.1

Microbac Laboratories Inc.
Microwave Digestion Log

00082786

Workgroup: WG309251
Analyst: VC
Spike Analyst: VC
Run Date: 08/07/2009 12:15
Method: 3051

SOP: ME406 Revison 11
Spike Solution: STD33694
Spike Witness: REK
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG309251-02	BLANK	7	.5 g	200 mL	173.528 g	173.522 g		
2	WG309251-03	LCS	7	.5 g	200 mL	176.235 g	176.229 g	.5 mL	
3	L09080143-01	SAMP	7	.521 g	200 mL	176.592 g	176.585 g		08/10/09
4	L09080143-02	SAMP	7	.536 g	200 mL	173.457 g	173.449 g		08/10/09
5	L09080143-03	SAMP	7	.549 g	200 mL	174.661 g	174.657 g		08/10/09
6	L09080143-04	SAMP	7	.522 g	200 mL	173.354 g	173.352 g		08/10/09
7	L09080143-05	SAMP	7	.525 g	200 mL	175.838 g	175.834 g		08/10/09
8	L09080143-06	SAMP	7	.514 g	200 mL	173.7 g	173.697 g		08/10/09
9	L09080143-07	SAMP	7	.501 g	200 mL	173.287 g	173.283 g		08/10/09
10	WG309251-01	REF	7	.509 g	200 mL	175.524 g	175.518 g		
11	L09080143-08	SAMP	7	.509 g	200 mL	175.524 g	175.518 g		08/10/09
12	WG309251-04	MS	7	.511 g	200 mL	173.801 g	173.795 g	.5 mL	
13	WG309251-05	MSD	7	.51 g	200 mL	174.58 g	174.58 g	.5 mL	

Analyst: Vicki Collins

Reviewer:

MW_DIG - Modified 07/02/2008
PDF ID: 1461073
Report generated: 08/07/2009 13:12

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ELAN-ICP Dataset: 080709A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 6
Maintenance Log ID:

Calibration Std: STD34439 ICV/CCV Std: STD34194 Post Spike: STD33697
ICSA: STD34135 ICSAB: STD34134 Int. Std: STD34348

Workgroups: 309144,309201,309217,309263,309040,308782,309275,309276,3091

Comments: 309201

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	EL.080709.095330	Blank	Blank		1		08/07/09 09:53
2	EL.080709.095913	WG309258-01	Calibration Point		1		08/07/09 09:59
3	EL.080709.100456	WG309258-02	Calibration Point		1		08/07/09 10:04
4	EL.080709.101040	WG309258-03	Calibration Point		1		08/07/09 10:10
5	EL.080709.101625	WG309258-04	Calibration Point		1		08/07/09 10:16
6	EL.080709.102210	WG309258-05	Initial Calibration Verification		1		08/07/09 10:22
7	EL.080709.102904	WG309258-06	Initial Calib Blank		1		08/07/09 10:29
8	EL.080709.103600	WG309258-07	CRQL Check Solid		1		08/07/09 10:36
9	EL.080709.104259	WG309258-08	CRQL Check Water		1		08/07/09 10:42
10	EL.080709.104957	WG309258-09	Interference Check		1		08/07/09 10:49
11	EL.080709.105654	WG309258-10	Interference Check		1		08/07/09 10:56
12	EL.080709.110350	WG309258-11	CCV		1		08/07/09 11:03
13	EL.080709.111044	WG309258-12	CCB		1		08/07/09 11:10
14	EL.080709.111717	L09080005-01	LOQ-1	40/100	1		08/07/09 11:17
15	EL.080709.112330	WG309183-02	Method/Prep Blank	.5/200	1		08/07/09 11:23
16	EL.080709.113005	WG309258-13	CCV		1		08/07/09 11:30
17	EL.080709.113659	WG309258-14	CCB		1		08/07/09 11:36
18	EL.080709.114332	WG309183-03	Laboratory Control S	.5/200	1		08/07/09 11:43
19	EL.080709.115022	L09080106-01	PRCSFL04	.513/200	1		08/07/09 11:50
20	EL.080709.115636	WG309183-01	Reference Sample		1	L09080106-02	08/07/09 11:56
21	EL.080709.120250	WG309183-04	Matrix Spike	.513/200	1	L09080106-02	08/07/09 12:02
22	EL.080709.120905	WG309183-05	Matrix Spike Duplica	.513/200	1	L09080106-02	08/07/09 12:09
23	EL.080709.121520	L09080106-03	PRCL01	.522/200	1		08/07/09 12:15
24	EL.080709.122136	WG309201-01	Post Digestion Spike		1	L09080106-03	08/07/09 12:21
25	EL.080709.122752	WG309201-02	Serial Dilution		5	L09080106-03	08/07/09 12:27
26	EL.080709.123408	L09080127-01	G-31-HSS003B (0.5)	.544/200	10		08/07/09 12:34
27	EL.080709.124044	WG309258-15	CCV		1		08/07/09 12:40
28	EL.080709.124738	WG309258-16	CCB		1		08/07/09 12:47
29	EL.080709.125601	WG309183-01	Reference Sample		10	L09080106-02	08/07/09 12:56
30	EL.080709.130216	WG309183-04	Matrix Spike	.513/200	10	L09080106-02	08/07/09 13:02
31	EL.080709.130830	WG309183-05	Matrix Spike Duplica	.513/200	10	L09080106-02	08/07/09 13:08
32	EL.080709.131506	WG309258-17	CCV		1		08/07/09 13:15
33	EL.080709.132200	WG309258-18	CCB		1		08/07/09 13:22
34	EL.080709.132835	WG309190-03	Method/Prep Blank	40/100	1		08/07/09 13:28
35	EL.080709.133450	WG309190-04	Laboratory Control S	40/100	1		08/07/09 13:34
36	EL.080709.134103	L09080081-03	POLISHED WATER -FRIDAY	40/100	1		08/07/09 13:41
37	EL.080709.134717	L09080081-04	DI WATER -FRIDAY	40/100	1		08/07/09 13:47

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Sheri L. Babgard

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Microbac Laboratories Inc.

Instrument Run Log

Instrument: ELAN-ICP Dataset: 080709A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 6
Maintenance Log ID:

Calibration Std: STD34439 ICV/CCV Std: STD34194 Post Spike: STD33697
ICSA: STD34135 ICSAB: STD34134 Int. Std: STD34348

Workgroups: 309144,309201,309217,309263,309040,308782,309275,309276,3091

Comments: 309201

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	EL.080709.135332	L09080100-01	OUTFALL 002/COMP	40/100	1	WG309190-01	08/07/09 13:53
39	EL.080709.140007	WG309258-19	CCV		1		08/07/09 14:00
40	EL.080709.140701	WG309258-20	CCB		1		08/07/09 14:07
41	EL.080709.141335	WG309190-05	Duplicate	40/100	1	L09080100-01	08/07/09 14:13
42	EL.080709.141950	WG309190-02	Reference Sample		1	L09080100-01	08/07/09 14:19
43	EL.080709.142605	WG309190-06	Matrix Spike	40/100	1		08/07/09 14:26
44	EL.080709.143221	WG309190-07	Matrix Spike Duplica	40/100	1	L09080100-01	08/07/09 14:32
45	EL.080709.143837	L09080124-02	LTL-K-EQBLK-2	40/100	1		08/07/09 14:38
46	EL.080709.144454	WG309217-01	Post Digestion Spike		1	L09080124-01	08/07/09 14:44
47	EL.080709.145110	WG309217-02	Serial Dilution		5	L09080124-01	08/07/09 14:51
48	EL.080709.145747	WG309258-21	CCV		1		08/07/09 14:57
49	EL.080709.150441	WG309258-22	CCB		1		08/07/09 15:04
50	EL.080709.151456	WG309251-02	Method/Prep Blank	.5/200	1		08/07/09 15:14
51	EL.080709.152112	WG309251-03	Laboratory Control S	.5/200	1		08/07/09 15:21
52	EL.080709.152725	WG309251-01	Reference Sample		1	L09080143-08	08/07/09 15:27
53	EL.080709.153340	WG309251-04	Matrix Spike		1	L09080143-08	08/07/09 15:33
54	EL.080709.153954	WG309251-05	Matrix Spike Duplica		1	L09080143-08	08/07/09 15:39
55	EL.080709.154609	L09080143-01	PRCSFL03	.521/200	1		08/07/09 15:46
56	EL.080709.155224	L09080143-02	PRCSFL03-QC	.536/200	1		08/07/09 15:52
57	EL.080709.155840	WG309263-01	Post Digestion Spike		1	L09080143-02	08/07/09 15:58
58	EL.080709.160456	WG309263-02	Serial Dilution		5	L09080143-02	08/07/09 16:04
59	EL.080709.161132	WG309258-23	CCV		1		08/07/09 16:11
60	EL.080709.161826	WG309258-24	CCB		1		08/07/09 16:18
61	EL.080709.162501	L09080143-03	PRCSWBD	.549/200	1		08/07/09 16:25
62	EL.080709.163117	L09080143-04	PRCSFL01		1		08/07/09 16:31
63	EL.080709.163734	L09080143-05	PRCSWHB	.525/200	1		08/07/09 16:37
64	EL.080709.164351	L09080143-06	PRCSFL02	.514/200	1		08/07/09 16:43
65	EL.080709.165007	L09080143-07	PRCSWFH		1		08/07/09 16:50
66	EL.080709.165657	WG309251-01	Reference Sample		10	L09080143-08	08/07/09 16:56
67	EL.080709.170311	WG309251-04	Matrix Spike	.511/200	10	L09080143-08	08/07/09 17:03
68	EL.080709.170926	WG309251-05	Matrix Spike Duplica	.51/200	10	L09080143-08	08/07/09 17:09
69	EL.080709.171542	L09080143-04	PRCSFL01	.522/200	10		08/07/09 17:15
70	EL.080709.172157	L09080143-07	PRCSWFH	.501/200	50		08/07/09 17:21
71	EL.080709.172832	WG309258-25	CCV		1		08/07/09 17:28
72	EL.080709.173526	WG309258-26	CCB		1		08/07/09 17:35
73	EL.080709.174200	WG309240-01	Method/Prep Blank		1		08/07/09 17:42
74	EL.080709.174815	WG309240-02	Laboratory Control S		1		08/07/09 17:48

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Instrument Run Log

Instrument: ELAN-ICP   Dataset: 080709A.REP
Analyst1: JYH   Analyst2: N/A
Method: 6020   SOP: ME700   Rev: 6
Maintenance Log ID:

Calibration Std: STD34439   ICV/CCV Std: STD34194   Post Spike: STD33697
ICSA: STD34135   ICSAB: STD34134   Int. Std: STD34348

Workgroups: 309144,309201,309217,309263,309040,308782,309275,309276,3091

Comments: 309201

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	EL.080709.175430	WG309240-03	Laboratory Control S		1		08/07/09 17:54
76	EL.080709.180046	L09080139-03	L09070470-01		1		08/07/09 18:00
77	EL.080709.180702	L09080139-04	L09070470-08		1		08/07/09 18:07
78	EL.080709.181318	WG309264-01	Post Digestion Spike		1	L09080139-04	08/07/09 18:13
79	EL.080709.181935	WG309264-02	Serial Dilution		5	L09080139-04	08/07/09 18:19
80	EL.080709.182611	WG309258-27	CCV		1		08/07/09 18:26
81	EL.080709.183306	WG309258-28	CCB		1		08/07/09 18:33
82	EL.080709.183941	WG309241-01	Method/Prep Blank		1		08/07/09 18:39
83	EL.080709.184559	WG309241-02	Laboratory Control S		1		08/07/09 18:45
84	EL.080709.185216	WG309241-03	Laboratory Control S		1		08/07/09 18:52
85	EL.080709.185834	L09080139-01	L09070470-01		1		08/07/09 18:58
86	EL.080709.190451	L09080139-02	L09070470-08		1		08/07/09 19:04
87	EL.080709.191106	WG309241-01	Method/Prep Blank		1		08/07/09 19:11
88	EL.080709.191721	WG309266-02	Serial Dilution		5	L09080139-02	08/07/09 19:17
89	EL.080709.192357	WG309258-29	CCV		1		08/07/09 19:23
90	EL.080709.193052	WG309258-30	CCB		1		08/07/09 19:30
91	EL.080709.193726	L09070202-02	02SB027A (0-6)	40/100	1		08/07/09 19:37
92	EL.080709.194342	L09070202-03	02SB028B (12-18)	40/100	1		08/07/09 19:43
93	EL.080709.194958	L09080049-01	FB014 (080109)	40/100	1		08/07/09 19:49
94	EL.080709.195615	WG308719-01	Reference Sample		100	L09070704-01	08/07/09 19:56
95	EL.080709.200232	WG308719-04	Matrix Spike	.512/200	100	L09070704-01	08/07/09 20:02
96	EL.080709.200849	WG308719-05	Matrix Spike Duplica	.513/200	100	L09070704-01	08/07/09 20:08
97	EL.080709.201507	WG308782-01	Post Digestion Spike		100	L09070704-01	08/07/09 20:15
98	EL.080709.202125	WG308782-02	Serial Dilution		500	L09070704-01	08/07/09 20:21
99	EL.080709.202802	WG309258-31	CCV		1		08/07/09 20:28
100	EL.080709.203457	WG309258-32	CCB		1		08/07/09 20:34
101	EL.080709.204133	WG308175-03	Method/Prep Blank	40/100	1		08/07/09 20:41
102	EL.080709.204750	WG308175-04	Laboratory Control S	40/100	1		08/07/09 20:47
103	EL.080709.205405	WG308175-02	Reference Sample		1	L09070545-06	08/07/09 20:54
104	EL.080709.210021	WG308175-06	Matrix Spike	40/100	1	L09070545-06	08/07/09 21:00
105	EL.080709.210637	WG308175-07	Matrix Spike Duplica	40/100	1	L09070545-06	08/07/09 21:06
106	EL.080709.211254	L09070545-01	1:1.5 BCR:MIW	40/100	1		08/07/09 21:12
107	EL.080709.211911	L09070545-02	1:3 BCR:MIW	40/100	1		08/07/09 21:19
108	EL.080709.212528	L09070545-03	PH 3	40/100	1		08/07/09 21:25
109	EL.080709.213146	WG309275-01	Post Digestion Spike		1	L09070545-03	08/07/09 21:31
110	EL.080709.213804	WG309275-02	Serial Dilution		5	L09070545-03	08/07/09 21:38
111	EL.080709.214441	WG309258-33	CCV		1		08/07/09 21:44

Page: 3   Approved: August 10, 2009

Sheri L. Pfalzgraf

Microbac®

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ELAN-ICP Dataset: 080709A.REP
Analyst1: JYH Analyst2: N/A
Method: 6020 SOP: ME700 Rev: 6
Maintenance Log ID:

Calibration Std: STD34439 ICV/CCV Std: STD34194 Post Spike: STD33697
ICSA: STD34135 ICSAB: STD34134 Int. Std: STD34348

Workgroups: 309144,309201,309217,309263,309040,308782,309275,309276,3091

Comments: 309201

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
112	EL.080709.215136	WG309258-34	CCB		1		08/07/09 21:51
113	EL.080709.215811	L09070545-04	PH 3.7	40/100	1		08/07/09 21:58
114	EL.080709.220430	L09070545-05	1:15 BCR:MIW	40/100	1		08/07/09 22:04
115	EL.080709.221049	WG308175-05	Duplicate	40/100	1	L09070545-05	08/07/09 22:10
116	EL.080709.221727	WG309258-35	CCV		1		08/07/09 22:17
117	EL.080709.222421	WG309258-36	CCB		1		08/07/09 22:24
118	EL.080709.223056	WG308694-02	Method/Prep Blank	40/100	1		08/07/09 22:30
119	EL.080709.223711	WG308694-03	Laboratory Control S	40/100	1		08/07/09 22:37
120	EL.080709.224328	WG308694-01	Reference Sample		1	L09070681-25	08/07/09 22:43
121	EL.080709.224944	WG308694-04	Matrix Spike	40/100	1	L09070681-25	08/07/09 22:49
122	EL.080709.225601	WG308694-05	Matrix Spike Duplica	40/100	1	L09070681-25	08/07/09 22:56
123	EL.080709.230218	L09070681-04	MW2A-239-20	40/100	1		08/07/09 23:02
124	EL.080709.230836	L09070681-09	MW4A-239-20	40/100	1		08/07/09 23:08
125	EL.080709.231454	WG309276-01	Post Digestion Spike		1	L09070681-09	08/07/09 23:14
126	EL.080709.232112	WG309276-02	Serial Dilution		5	L09070681-09	08/07/09 23:21
127	EL.080709.232750	WG309258-37	CCV		1		08/07/09 23:27
128	EL.080709.233444	WG309258-38	CCB		1		08/07/09 23:34
129	EL.080709.234120	L09070681-14	MW5A-239-20	40/100	1		08/07/09 23:41
130	EL.080709.234739	L09070681-19	OW1A-239-20	40/100	1		08/07/09 23:47
131	EL.080709.235358	L09070681-22	MW2B-239-14	40/100	1		08/07/09 23:53
132	EL.080809.000016	L09070681-34	MW3A-239-14	40/100	1		08/08/09 00:00
133	EL.080809.000632	L09070681-37	MW3B-239-14	40/100	1		08/08/09 00:06
134	EL.080809.001249	L09070681-40	MW3C-239-14	40/100	1		08/08/09 00:12
135	EL.080809.001906	L09070681-43	MW3C2-389-14	40/100	1		08/08/09 00:19
136	EL.080809.002523	L09070681-46	MW4B-239-14	40/100	1		08/08/09 00:25
137	EL.080809.003141	L09070681-49	MW4C-239-14	40/100	1		08/08/09 00:31
138	EL.080809.003759	L09070681-52	OW1B-239-14	40/100	1		08/08/09 00:37
139	EL.080809.004436	WG309258-39	CCV		1		08/08/09 00:44
140	EL.080809.005130	WG309258-40	CCB		1		08/08/09 00:51
141	EL.080809.005806	L09070681-59	OW2A-239-20	40/100	1		08/08/09 00:58
142	EL.080809.010425	L09070681-64	OW3A-239-20	40/100	1		08/08/09 01:04
143	EL.080809.011044	L09070709-36	ORG-S01-239-14	40/100	1		08/08/09 01:10
144	EL.080809.011703	L09070709-38	ORG-S02-239-14	40/100	1		08/08/09 01:17
145	EL.080809.012341	WG309258-41	CCV		1		08/08/09 01:23
146	EL.080809.013035	WG309258-42	CCB		1		08/08/09 01:30

Page: 4 Approved: August 10, 2009

Sheri L. Babgard

Microbac

Microbac Laboratories Inc.

Data Checklist

Date: 07-AUG-2009
Analyst: JYH
Analyst: NA
Method: 6020
Instrument: ELAN
Curve Workgroup: 309258
Runlog ID: 29521
Analytical Workgroups: 309144,309201,309217,309263,309040,308782,309275,309276

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	X
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	005,106,127,081,124,143,202,049
	545,681,709,652
Client Forms	X
Level X	
Level 3	106,143,202
Level 4	127,081,049,652,
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	SLP
Comments	

Primary Reviewer:

Secondary Reviewer:
10-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-10-2009 13:03:44

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00082792

Analytical Method: 6020 AAB#: WG309263

Login Number: L09080143

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRCSFL03	01	08/06/09					08/07/09	1.2	180		08/07/09	1.3	180	
PRCSFL03-QC	02	08/06/09					08/07/09	1.2	180		08/07/09	1.3	180	
PRCSWBD	03	08/06/09					08/07/09	1.2	180		08/07/09	1.3	180	
PRCSFL01	04	08/06/09					08/07/09	1.2	180		08/07/09	1.4	180	
PRCSWHB	05	08/06/09					08/07/09	1	180		08/07/09	1.2	180	
PRCSFL02	06	08/06/09					08/07/09	1	180		08/07/09	1.2	180	
PRCSWFH	07	08/06/09					08/07/09	.9	180		08/07/09	1.1	180	
PRCSFL05	08	08/06/09					08/07/09	.9	180		08/07/09	1.1	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1461949
Report generated 08/10/2009 10:23

METHOD BLANK SUMMARY

Login Number: L09080143
Work Group: WG309263
Blank File ID: EL.080709.151456
Blank Sample ID: WG309251-02
Prep Date: 08/07/09 12:15
Instrument ID: ELAN-ICP
Analyzed Date: 08/07/09 15:14
Method: 6020
Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309251-03	EL.080709.152112	08/07/09 15:21	01
PRCSFL03	L09080143-01	EL.080709.154609	08/07/09 15:46	01
PRCSFL03-QC	L09080143-02	EL.080709.155224	08/07/09 15:52	01
PRCSWBD	L09080143-03	EL.080709.162501	08/07/09 16:25	01
PRCSWHB	L09080143-05	EL.080709.163734	08/07/09 16:37	01
PRCSFL02	L09080143-06	EL.080709.164351	08/07/09 16:43	01
PRCSFL05	L09080143-08	EL.080709.165657	08/07/09 16:56	DL01
PRCSFL01	L09080143-04	EL.080709.171542	08/07/09 17:15	DL01
PRCSWFH	L09080143-07	EL.080709.172157	08/07/09 17:21	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1461950
Report generated 08/10/2009 10:24

Microbac Laboratories Inc.

METHOD BLANK REPORT

00082794

Login Number:L09080143 Prep Date:08/07/09 12:15 Sample ID:WG309251-02
Instrument ID:ELAN-ICP Run Date:08/07/09 15:14 Prep Method:3051
File ID:EL.080709.151456 Analyst:JYH Method:6020
Workgroup (AAB#):WG309263 Matrix:Soil Units:mg/kg
Contract #:DACA56-94-D-0020 Cal ID:ELAN-I-07-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Lead, Total	0.100	0.200	0.100	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1461951
10-AUG-2009 10:24

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00082795

Login Number: L09080143 Run Date: 08/07/2009 Sample ID: WG309251-03
Instrument ID: ELAN-ICP Run Time: 15:21 Prep Method: 3051
File ID: EL.080709.152112 Analyst: JYH Method: 6020
Workgroup (AAB#): WG309263 Matrix: Soil Units: mg/kg
QC Key: STD Lot#: STD33694 Cal ID: ELAN-I-07-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Lead, Total	10.0	9.85	98.5	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 1461952
Report generated: 08/10/2009 10:24

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00082796

Loginnum:L09080143 Cal ID: ELAN-ICP- Worknum:WG309263

Instrument ID:ELAN-ICP Contract #:DACA56-94-D-0020 Method:6020

Parent ID:WG309251-01 File ID:EL.080709.165657 Dil:10 Matrix:SOLID

Sample ID:WG309251-04 MS File ID:EL.080709.170311 Dil:10 Units:mg/kg

Sample ID:WG309251-05 MSD File ID:EL.080709.170926 Dil:10 Percent Solid:80.8

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Lead, Total	47.3	12.1	56.7	78.1	12.1	51.5	34.6	9.74	75 - 125	20	*

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008

PDF File ID:1461953

Report generated 08/10/2009 13:30

Microbac Laboratories Inc.
Serial Dilution Report

Login: L09080143 **Worknum:** WG309263
Instrument: ELAN-ICP **Method:** 6020
Serial Dil: WG309263-02 **File ID:** EL.080709.160456 **Dil:** 5 **Units:** ug/L
Sample: L09080143-02 **File ID:** EL.080709.155224 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Lead	19.6	X	21.7	X	10.70	

U = Result is below MDL.
F = Result is greater than or equal to MDL and less than the RL.
X = Result is greater than or equal to RL and less than 100 times the MDL.
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 100 times the MDL.

SERIAL_DIL - Modified 09/22/2008
PDF File ID: 1461947
08/10/2009 10:24

Sample Login ID: L09080143 **Worknum:** WG309263
Instrument ID: ELAN-ICP **Method:** 6020
Post Spike ID: WG309263-01 **File ID:** EL.080709.155840 **Dil:** 1 **Units:** ug/L
Sample ID: L09080143-02 **File ID:** EL.080709.155224 **Dil:** 1 **Matrix:** Soil

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
LEAD	70.8		19.6		50	102.4	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1461948
Report generated: 08/10/2009 10:24

Microbac Laboratories Inc.
Initial Calibration Summary

00082799

Login:	**L09080143**	Workgroup (AAB#):	**WG309263**
Analytical Method:	**6020**	Instrument ID:	**ELAN-ICP**
ICAL Worknum:	**WG309258**	Initial Calibration Date:	**07-AUG-2009 10:16**

	WG309258-01		WG309258-02		WG309258-03		WG309258-04			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
LEAD	0	395	.4	13100	50	1610000	100	3180000	1	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

INT_CAL_ICP - Modified 03/06/2008
PDF File ID: 1461957
Report generated: 10-AUG-2009 10:23

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

00082800

Login Number: L09080143 Run Date: 08/07/2009 Sample ID: WG309258-06
Instrument ID: ELAN-ICP Run Time: 10:29 Method: 6020
File ID: EL.080709.102904 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG309263 Cal ID: ELAN-ICP - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
LEAD	.25	.5	.25	U

ICB - Modified 07/14/2009
PDF File ID: 1461959
Report generated 08/10/2009 10:23

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

00082801

Login Number: L09080143 Run Date: 08/07/2009 Sample ID: WG309258-12

Instrument ID: ELAN-ICP Run Time: 11:10 Method: 6020

File ID: EL.080709.111044 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG309263 Cal ID: ELAN-I - 07-AUG-09

Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Lead	0.250	0.500	0.250	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008

PDF File ID: 1461962

Report generated 08/10/2009 10:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082802

Login Number: L09080143 Run Date: 08/07/2009 Sample ID: WG309258-22
Instrument ID: ELAN-ICP Run Time: 15:04 Method: 6020
File ID: EL.080709.150441 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG309263 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Lead	0.250	0.500	0.250	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461962
Report generated 08/10/2009 10:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082803

Login Number: L09080143 Run Date: 08/07/2009 Sample ID: WG309258-24
Instrument ID: ELAN-ICP Run Time: 16:18 Method: 6020
File ID: EL.080709.161826 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG309263 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Lead	0.250	0.500	0.250	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1461962
Report generated 08/10/2009 10:23

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

00082804

Login Number: L09080143 Run Date: 08/07/2009 Sample ID: WG309258-26

Instrument ID: ELAN-ICP Run Time: 17:35 Method: 6020

File ID: EL.080709.173526 Analyst: JYH Units: ug/L

Workgroup (AAB#): WG309263 Cal ID: ELAN-I - 07-AUG-09

Matrix: SOIL

Analytes	MDL	RDL	Concentration	Qualifier
Lead	0.250	0.500	0.250	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008

PDF File ID: 1461962

Report generated 08/10/2009 10:23

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00082805

Login Number: L09080143 Run Date: 08/07/2009 Sample ID: WG309258-05
Instrument ID: ELAN-ICP Run Time: 10:22 Method: 6020
File ID: EL.080709.102210 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG309263 Cal ID: ELAN-I - 07-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Lead		50	47.9	95.8	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1461958
Report generated 08/10/2009 10:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082806

Login Number: L09080143 Run Date: 08/07/2009 Sample ID: WG309258-11
Instrument ID: ELAN-ICP Run Time: 11:03 Method: 6020
File ID: EL.080709.110350 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG309263 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Lead		50.0	48.8	ug/L	97.6	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1461961
Report generated 08/10/2009 10:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082807

Login Number: L09080143 Run Date: 08/07/2009 Sample ID: WG309258-21
Instrument ID: ELAN-ICP Run Time: 14:57 Method: 6020
File ID: EL.080709.145747 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG309263 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Lead		50.0	51.3	ug/L	103	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1461961
Report generated 08/10/2009 10:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082808

Login Number: L09080143 Run Date: 08/07/2009 Sample ID: WG309258-23
Instrument ID: ELAN-ICP Run Time: 16:11 Method: 6020
File ID: EL.080709.161132 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG309263 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Lead		50.0	50.3	ug/L	101	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1461961
Report generated 08/10/2009 10:23

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082809

Login Number: L09080143 Run Date: 08/07/2009 Sample ID: WG309258-25
Instrument ID: ELAN-ICP Run Time: 17:28 Method: 6020
File ID: EL.080709.172832 Analyst: JYH QC Key: STD
Workgroup (AAB#): WG309263 Cal ID: ELAN-I - 07-AUG-09
Matrix: SOIL

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Lead		50.0	51.9	ug/L	104	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1461961
Report generated 08/10/2009 10:23

Login number: L09080143 **Workgroup (AAB#):** WG309263
Instrument ID: ELAN-ICP **Method:** 6020
Sol. A : WG309258-09 **File ID:** EL.080709.104957 **Units:** ug/L
Sol. AB : WG309258-10 **File ID:** EL.080709.105654 **Matrix:** Soil

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Lead	NS	0.0214	NS	100	97.7	97.7	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

ICS - Modified 03/06/2008
PDF File ID: 1461960
Report generated 08/10/2009 10:23

Microbac Laboratories Inc.

INTERNAL STANDARD REPORT

Login: L09080143 **Analytical Method:** 6020
Analytical Workgroup: WG309263 **Matrix:** 7
Instrument: ELAN-ICP **Analyst:** JYH
ICAL Date: 07-AUG-2009 09:59

			BISMUTH	GERMANIUM	INDIUM	TERBIUM
Sample	Type	Run Date	% Rec	% Rec	% Rec	% Rec
L09080143-01	SAMP	07-AUG-2009 15:46	107.599	107.263	102.144	104.528
L09080143-02	SAMP	07-AUG-2009 15:52	108.546	107.305	102.859	102.244
L09080143-03	SAMP	07-AUG-2009 16:25	112.994	107.524	102.672	102.884
L09080143-04	SAMP	07-AUG-2009 17:15	99.938	103.666	97.793	94.028
L09080143-05	SAMP	07-AUG-2009 16:37	108.965	108.621	103.135	102.671
L09080143-06	SAMP	07-AUG-2009 16:43	106.04	107.138	102.418	100.049
L09080143-07	SAMP	07-AUG-2009 17:21	95.495	102.517	97.333	92.895
L09080143-08	SAMP	07-AUG-2009 16:56	96.907	103.034	99.964	93.508
WG309251-01	REF	07-AUG-2009 16:56	96.907	103.034	99.964	93.508
WG309251-02	BLANK	07-AUG-2009 15:14	98.356	103.353	97.926	95.679
WG309251-03	LCS	07-AUG-2009 15:21	100.649	102.649	99.943	96.45
WG309251-04	MS	07-AUG-2009 17:03	96.37	103.271	95.948	92.415
WG309251-05	MSD	07-AUG-2009 17:09	99.521	104.047	99.968	95.078
WG309258-05	ICV	07-AUG-2009 10:22	104.802	101.158	98.796	99.594
WG309258-06	ICB	07-AUG-2009 10:29	102.892	102.581	100.157	96.579
WG309258-11	CCV	07-AUG-2009 11:03	101.579	97.834	95.599	95.853
WG309258-12	CCB	07-AUG-2009 11:10	99.561	97.94	97.884	96.474
WG309258-21	CCV	07-AUG-2009 14:57	101.138	101.876	100.191	97.616
WG309258-22	CCB	07-AUG-2009 15:04	105.983	106.667	100.909	99.798
WG309258-23	CCV	07-AUG-2009 16:11	102.388	106.295	102.72	97.469
WG309258-24	CCB	07-AUG-2009 16:18	103.129	106.374	102.018	98.331
WG309258-25	CCV	07-AUG-2009 17:28	100.097	110.062	99.438	94.626
WG309258-26	CCB	07-AUG-2009 17:35	101.097	107.977	102.725	97.052
WG309263-01	PSPK	07-AUG-2009 15:58	107.119	109.413	103.032	101.134
WG309263-02	SERIAL	07-AUG-2009 16:04	96.643	104.471	98.951	95.649

Acceptance criteria: 30% - 120%
Underlined recoveries are out of range

INT_STD_ICPMS - Modified 03/05/2008
PDF File ID: 1461956
Report generated: 08/10/2009 13:30

Login Number: L09080143 **Date:** 06/08/2009
Insturment ID: ELAN-ICP **Method:** 6020

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Antimony	1.00	100.0
Arsenic	1.00	100.0
Barium	1.00	100.0
Cadmium	1.00	100.0
Chromium	1.00	100.0
Cobalt	1.00	100.0
Copper	1.00	100.0
Lead	1.00	100.0
Manganese	1.00	100.0
Nickel	1.00	100.0
Selenium	1.00	100.0
Silver	1.00	100.0
Thallium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1461954
Report generated: 08/10/2009 10:23

Login Number: L09080143 **Date:** 06/17/2009
Insturment ID: ELAN-ICP **Method:** 6020

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Uranium	1.00	100.0

Comments:
All analytes passed acceptance criteria at the specified concentration.

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1461954
Report generated: 08/10/2009 10:23

2.2 General Chemistry Data

2.2.1 Percent Solids Data

2.2.1.1 Raw Data

LABORATORY REPORT

00082818

L09080143

08/10/09 17:04

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRCSFL03	L09080143-01	D2216-90	1	07-AUG-09
PRCSFL03-QC	L09080143-02	D2216-90	1	07-AUG-09
PRCSWBD	L09080143-03	D2216-90	1	07-AUG-09
PRCSFL01	L09080143-04	D2216-90	1	07-AUG-09
PRCSWHB	L09080143-05	D2216-90	1	07-AUG-09
PRCSFL02	L09080143-06	D2216-90	1	07-AUG-09
PRCSWFH	L09080143-07	D2216-90	1	07-AUG-09
PRCSFL05	L09080143-08	D2216-90	1	07-AUG-09

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082819

Sample Number:	L09080143-01	PrePrep Method:	NONE	Instrument:	BAL001
Client ID:	PRCSFL03	Prep Method:	D2216-90	Prep Date:	08/10/2009 08:39
Matrix:	Soil	Analytical Method:	D2216-90	Cal Date:	
Workgroup Number:	WG309281	Analyst:	JDH	Run Date:	08/10/2009 08:39
Collect Date:	08/06/2009 08:30	Dilution:	1	File ID:	B1.309281-0101
Sample Tag:	01	Units:	weight %		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	82.7		1.00	1.00

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082820

Sample Number: **L09080143-02**
Client ID: **PRCSFL03-QC**
Matrix: **Soil**
Workgroup Number: **WG309281**
Collect Date: **08/06/2009 08:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **JDH**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/10/2009 08:39**
Cal Date:
Run Date: **08/10/2009 08:39**
File ID: **B1.309281-0102**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**84.2**		**1.00**	**1.00**

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082821

Sample Number:	**L09080143-03**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**PRCSWBD**	Prep Method:	**D2216-90**	Prep Date:	**08/10/2009 08:39**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG309281**	Analyst:	**JDH**	Run Date:	**08/10/2009 08:39**
Collect Date:	**08/06/2009 08:30**	Dilution:	**1**	File ID:	**B1.309281-0103**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**85.0**		**1.00**	**1.00**

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082822

Sample Number:	**L09080143-04**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**PRCSFL01**	Prep Method:	**D2216-90**	Prep Date:	**08/10/2009 08:39**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG309281**	Analyst:	**JDH**	Run Date:	**08/10/2009 08:39**
Collect Date:	**08/06/2009 08:15**	Dilution:	**1**	File ID:	**B1.309281-0104**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**88.5**		**1.00**	**1.00**

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082823

Sample Number:	L09080143-05	PrePrep Method:	NONE	Instrument:	BAL001
Client ID:	PRCSWHB	Prep Method:	D2216-90	Prep Date:	08/10/2009 08:39
Matrix:	Soil	Analytical Method:	D2216-90	Cal Date:	
Workgroup Number:	WG309281	Analyst:	JDH	Run Date:	08/10/2009 08:39
Collect Date:	08/06/2009 12:05	Dilution:	1	File ID:	B1.309281-0105
Sample Tag:	01	Units:	weight %		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	10-02-6	81.9		1.00	1.00

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082824

Sample Number:	**L09080143-06**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**PRCSFL02**	Prep Method:	**D2216-90**	Prep Date:	**08/10/2009 08:39**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG309281**	Analyst:	**JDH**	Run Date:	**08/10/2009 08:39**
Collect Date:	**08/06/2009 12:00**	Dilution:	**1**	File ID:	**B1.309281-0106**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**82.7**		**1.00**	**1.00**

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082825

Sample Number:	**L09080143-07**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**PRCSWFH**	Prep Method:	**D2216-90**	Prep Date:	**08/10/2009 08:39**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG309281**	Analyst:	**JDH**	Run Date:	**08/10/2009 08:39**
Collect Date:	**08/06/2009 14:30**	Dilution:	**1**	File ID:	**B1.309281-0107**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**86.3**		**1.00**	**1.00**

Report Number: **L09080143**
Report Date : **August 10, 2009**

00082826

Sample Number:	**L09080143-08**	PrePrep Method:	**NONE**	Instrument:	**BAL001**
Client ID:	**PRCSFL05**	Prep Method:	**D2216-90**	Prep Date:	**08/10/2009 08:39**
Matrix:	**Soil**	Analytical Method:	**D2216-90**	Cal Date:	
Workgroup Number:	**WG309281**	Analyst:	**JDH**	Run Date:	**08/10/2009 08:39**
Collect Date:	**08/06/2009 14:35**	Dilution:	**1**	File ID:	**B1.309281-0108**
Sample Tag:	**01**	Units:	**weight %**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**80.8**		**1.00**	**1.00**

Example Percent Solids Calculations

1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:	
WT1 = Weight, in grams, of the empty container	1.30 g
WT2 = Weight, in grams, of the container and wet sample	21.274 g
WT3 = Weight, in grams, of the container and dried sample	5.21 g
F = Factor to get units as percent weight	100
%Solids = Percent solids present in sample.	19.58%

2.0 Calculating the percent moisture of a sample.

% Moisture = 100 - % Solids from 1.0 calculation

PERCENT SOLIDS

Workgroup (AAB#): WG309281 Analyst: JDH ADT(on): 08/07/2009 16:07
Method: D2216-90 Instrument: BAL001 ADT(off): 08/10/2009 08:39
SOP: K0003 Rev: 9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09080143-01	1.29	38.19	31.79			82.66	
L09080143-02	1.28	39.2	33.19			84.15	
L09080143-03	1.29	32.22	27.58			85.00	
L09080143-04	1.28	45.86	40.74			88.52	
L09080143-05	1.28	34.45	28.46			81.94	
L09080143-06	1.3	24.49	20.48			82.71	
L09080143-07	1.29	29.68	25.79			86.30	
L09080143-08	1.3	29.53	24.1			80.77	
L09080144-01	1.29	31.76	26.96			84.25	
L09080167-10	1.3	24.76	20.62			82.35	
WG309281-01	1.3	24.76	20.62			82.35	17.65
WG309281-02	1.33	24.21	20.59			84.18	15.82

Analyst: Justin Hesson

PERCENT_SOLIDS - Modified 04/24/2008
PDF ID: 1461458
Report generated: 08/10/2009 08:41

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
August 10, 2009

ADC – ANTHONY D. CANTER	AJF – AMANDA J. FICKIESEN	AJM – ANTHONY J. MOSSBURG
ALB – ANNIE L. BROWN	AML – ANTHONY M. LONG	BLG – BRENDA L. GREENWALT
BRG – BRENDA R. GREGORY	CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS
CAH – CHARLES A. HALL	CEB – CHAD E. BARNES	CLC – CHRYS L. CRAWFORD
CLW – CHARISSA L. WINTERS	CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
DDE – DEBRA D. ELLIOTT	DEL – DON E. LIGHTFRITZ	DEV – DAVID E. VANDENBERG
DGB – DOUGLAS G. BUTCHER	DIH – DEANNA I. HESSON	DLB – DAVID L. BUMGARNER
DLP – DOROTHY L. PAYNE	DLR – DIANNA L. RAUCH	DR – DEANNA ROBERTS
ECL – ERIC C. LAWSON	EDA – ERIN D. AGEE	ERP – ERIN R. PORTER
FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR	HJR – HOLLY J. REED
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON	JKT – JANE K. THOMPSON
JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES	JYH – JI Y. HU
KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES	KRA – KATHY R. ALBERTSON
LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA	MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING	MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON	NPM – NATHANIEL P. MILLER
PDM – PIERCE D. MORRIS	RAH – ROY A. HALSTEAD	RB – ROBERT BUCHANAN
REK – ROBERT E. KYER	RLK – ROBIN L. KLINGER	RWC – RODNEY W. CAMPBELL
SDH – SHANA D. HINYARD	SLM – STEPHANIE L. MOSSBURG	SLP – SHERI L. PFALZGRAF
TIP – TAE I. PARRISH	TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS
VC – VICKI COLLIER	WTD – WADE T. DELONG	

Qualkey: STD_ND=U

Qualifier	Description
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

COC NO. (DATE-01)

Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Microbac
Address : 158 Starlite Drive, Marietta OH 45750
Contact : Stephanie Mossburg
Phone: 1-800-373-4071

PM: Praveen Svrivastav (713.996.4588) TAT: 24 Hr
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: Pistol Range Site: Confirmation Sampling
Project #: 117591-0009B340 Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713) 247-9292
Sampler Sign: M. Willmore

24 HOUR TAT!!

Sample Number	Grab	Date	Time	Matrix	# of Containers	Lead (6020)	Comments
PRCSFL03	X	8/6/09	8:30	Soil	1	X	
PRCS FL03-QC	X	8/6/09	8:30	Soil	1	X	
PRCS WBD	X	8/6/09	8:30	Soil	1	X	
PRCS FL01	X	8/6/09	8:15	Soil	1	X	
PRCS WHB	X	8/6/09	12:05	Soil	1	X	
PRCS FL02	X	8/6/09	12:00	Soil	1	X	
PRCSWFH	X	8/6/09	14:30	Soil	1	X	
PRCSFL05	X	8/6/09	14:35	Soil	1	X	
	X			Soil			
	X			Soil			
	X			Soil			
	X			Soil			
	X			Soil			
	X			Soil			
	X			Soil			

Relinquished By: M. Willmore
Date/Time 8/6/09 17:30

Received By:
Date/Time

Special Instructions: 24 HOUR TAT ON ALL SAMPLES

Relinquished By:
Date/Time

Received for Microbac OVD
Received: 08/07/2009 10:12
By: ERIN PORTER
Erin Porter

221000000977

Remarks:

Page 77

00082832

COOLER INSPECTION

Received: 08/07/2009 10:12
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09080143

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0013156	H	2.0	1Z66V7250195297569	date-01	

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct perservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Internal Chain of Custody Report

Login: L09080143
Account: 2773
Project: 2773.025
Samples: 8
Due Date: 10-AUG-2009

Samplenum	Container ID	Products
L09080143-01	604156	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:00	ERE	
2	PREP	W1	DIG	07-AUG-2009 12:01	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 13:54	JYH	REK
4	STORE	WET	A1	10-AUG-2009 08:27	JKT	CPD

***Sample extract/digestate**

Samplenum	Container ID	Products
L09080143-02	604157	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:00	ERE	
2	PREP	W1	DIG	07-AUG-2009 12:01	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 13:54	JYH	REK
4	STORE	WET	A1	10-AUG-2009 08:27	JKT	CPD

***Sample extract/digestate**

Samplenum	Container ID	Products
L09080143-03	604158	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:00	ERE	
2	PREP	W1	DIG	07-AUG-2009 12:01	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 13:54	JYH	REK
4	STORE	WET	A1	10-AUG-2009 08:27	JKT	CPD

***Sample extract/digestate**

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L09080143
Account: 2773
Project: 2773.025
Samples: 8
Due Date: 10-AUG-2009

Samplenum	Container ID	Products
L09080143-04	604159	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:00	ERE	
2	PREP	W1	DIG	07-AUG-2009 12:01	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 13:54	JYH	REK
4	STORE	WET	A1	10-AUG-2009 08:27	JKT	CPD

***Sample extract/digestate**

Samplenum	Container ID	Products
L09080143-05	604160	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:00	ERE	
2	PREP	W1	DIG	07-AUG-2009 12:01	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 13:54	JYH	REK
4	STORE	WET	A1	10-AUG-2009 08:27	JKT	CPD

***Sample extract/digestate**

Samplenum	Container ID	Products
L09080143-06	604161	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:00	ERE	
2	PREP	W1	DIG	07-AUG-2009 12:01	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 13:54	JYH	REK
4	STORE	WET	A1	10-AUG-2009 08:27	JKT	CPD

***Sample extract/digestate**

Samplenum	Container ID	Products
L09080143-07	604162	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:00	ERE	
2	PREP	W1	DIG	07-AUG-2009 12:01	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 13:54	JYH	REK

***Sample extract/digestate**

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L09080143
Account: 2773
Project: 2773.025
Samples: 8
Due Date: 10-AUG-2009

Samplenum	Container ID	Products
L09080143-08	604163	PCT-S

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:00	ERE	
2	PREP	W1	DIG	07-AUG-2009 12:01	REK	JKT
3	ANALYZ*	DIG	METALS	07-AUG-2009 13:54	JYH	REK
4	STORE	WET	A1	10-AUG-2009 08:27	JKT	CPD

Sample extract/digestate

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Microbac®

158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • http://www.microbac.com

Laboratory Report Number: L09080144

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	*Team Chemist/Data Specialist*	kalbertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	smossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	tlong@microbac.com
Amanda Fickiesen	*Client Services Specialist*	afickiesen@microbac.com
Annie Brown	*Client Services Specialist*	abrown@microbac.com

This report was reviewed on August 13, 2009.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on August 13, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 190 pages.

Look closer. Go further. Do more.

Microbac

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

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Click on "Online Data Access"
User ID: jdoe@abc.com
Password: demo

Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09080144
PREPARED FOR Shaw E I, Inc.
WORK ID:

1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09080144

CHAIN OF CUSTODY: The chain of custody number was 080609-01

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 2 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 10-AUG-09
Stephanie Mossburg

Laboratory Data Package Cover Page

00082842

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MAREN M. BEERY	Maren Beery	Metals Supervisor	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309423
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ED(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309423
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082847

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MAREN M. BEERY	Maren Beery	Metals Supervisor	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

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Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG309389
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	✓				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG309389
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082852

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	REACTIVITY
Prep Batch Number(s):	WG309302, WG309303
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓		✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	REACTIVITY
Prep Batch Number(s):	WG309302, WG309303
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082857

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309281
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309281
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082862

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	FLASHPOINT
Prep Batch Number(s):	WG309412
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	FLASHPOINT
Prep Batch Number(s):	WG309412
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082867

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna I. Hesson	Conventional Lab Supervisor	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	PH
Prep Batch Number(s):	WG309283
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	PH
Prep Batch Number(s):	WG309283
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00082872

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	August 13, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080144
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	WG309491
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	August 13, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT
ER# - Description
There were no exceptions.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00082879

L09080144

08/13/09 10:03

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS01	L09080144-01	8260B	10	07-AUG-09

Report Number: **L09080144**
Report Date : **August 13, 2009**

00082880

Sample Number: **L09080144-01**
Client ID: **PRDS01**
Matrix: **Leachate**
Workgroup Number: **WG309491**
Collect Date: **08/06/2009 13:45**
Sample Tag: **DL01**

PrePrep Method: **1311**
Prep Method: **5030C**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **10**
Units: **ug/L**

Instrument: **HPMS8**
Prep Date: **08/12/2009 12:22**
Cal Date: **07/30/2009 16:56**
Run Date: **08/12/2009 12:22**
File ID: **8M355731**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Benzene	71-43-2		U	50	1.25	D018	500
Carbon tetrachloride	56-23-5		U	50	2.5	D019	500
Chlorobenzene	108-90-7		U	50	1.25	D021	100000
Chloroform	67-66-3		U	50	1.25	D022	6000
1,2-Dichloroethane	107-06-2		U	50	2.5	D028	500
1,1-Dichloroethene	75-35-4		U	50	5	D029	700
Methyl Ethyl Ketone	78-93-3		U	100	25	D035	200000
Tetrachloroethene	127-18-4		U	50	2.5	D039	700
Trichloroethene	79-01-6		U	50	2.5	D040	500
Vinyl chloride	75-01-4		U	100	2.5	D043	200

Surrogate	% Recovery	Lower	Upper
Dibromofluoromethane	91.2	86	118
1,2-Dichloroethane-d4	88.0	80	120
Toluene-d8	98.6	88	110
4-Bromofluorobenzene	96.1	86	115

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:

	Example
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

TCLP Volatile

Analyst(s): RWC
Date: 8-11-09

Analyst/Date		Analyst/Date	
RWC 8-11-09		RWC 8-12-09	
Time On	Temp On °C	Time Off	Temp Off °C
1530	24	0730	23

ZHE	Sample #	Tests	PSI ON	PSI OFF	Method	Fluid #	Matrix*	%Solid	Size Reduction Yes	Size Reduction No	Int. Wt. (g)	Fluid Vol. (mL)
A												
B												
C												
D												
E												
F												
G												
H												
I												
J	08-1494-01	VOA	10	10	1311	FI-759	S/S	100		✓	25.08	500
K												
L												
M												
N												
O												
P												
Q												
R												
S												
N/A	FBLK	VOA	N/A	N/A	1311	FI-759	N/A	N/A		✓	40	40
				RWC 8-11-09								

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: _____

Peer Review By: _____ Supervisor Review: _____

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 073009
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 624 SOP: MSV10 Rev: 7
Method: 5030C/5035A SOP: PAT01 Rev: 12
Maintenance Log ID: 29629

Internal Standard: STD33984 Surrogate Standard: STD34126
CCV: STD34357 LCS: STD34248 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG308451

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	8M355436	GAS CHECK	NA	1	1		07/30/09 09:26
2	8M355437	RINSE	NA	1	1		07/30/09 09:59
3	8M355438	RINSE	NA	1	1		07/30/09 10:31
4	8M355439	WG308451-01 50NG BFB STD 8260	NA	1	1	STD33918	07/30/09 11:17
5	8M355440	WG308451-01 50NG BFB STD 8260	NA	1	1	STD33918	07/30/09 11:31
6	8M355441	WG308451-02 0.3ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 11:57
7	8M355442	WG308451-03 0.4ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 12:31
8	8M355443	WG308451-04 1ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 13:09
9	8M355444	WG308451-05 2ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 13:41
10	8M355445	WG308451-06 5ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 14:13
11	8M355446	WG308451-07 20ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 14:46
12	8M355447	WG308451-08 50ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 15:18
13	8M355448	WG308451-09 100ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 15:50
14	8M355449	WG308451-10 200ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 16:24
15	8M355450	WG308451-11 300ug/L WATER STD 8260	NA	1	1	STD34357	07/30/09 16:56
16	8M355451	RINSE	NA	1	1		07/30/09 17:28
17	8M355452	WG308451-12 20ug/L ALT SOURCE	NA	1	1	STD34248	07/30/09 18:00

Comments

Seq.	Rerun	Dil.	Reason	Analytes
4				
File ID: 8M355439				
	RR, BFB failed.			

Approved: August 03, 2009

Page: 1

Microbac Laboratories Inc.

Data Checklist

Date: 30-JUL-2009
Analyst: MES
Analyst: NA
Method: 8260/624
Instrument: HPMS8
Curve Workgroup: NA
Runlog ID: 29385
Analytical Workgroups: WG308451

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	NA
Project/Client Specific Requirements	NA
Special Standards	NA
Blanks	NA
TCL's	NA
Surrogates	NA
LCS (Laboratory Control Sample)	NA
Recoveries	NA
Surrogates	NA
MS/MSD/Duplicates	NA
Samples	NA
TCL Hits	NA
Spectra of TCL Hits	NA
Surrogates	NA
Internal Standards Criteria	NA
Library Searches	NA
Calculations & Correct Factors	NA
Dilutions Run	NA
Reruns	NA
Manual Integrations	X
Case Narrative	NA
Results Reporting/Data Qualifiers	NA
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
31-JUL-2009

Secondary Reviewer:
03-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-03-2009 14:06:13

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00082887

Analytical Method: 8260B AAB#: WG309491

Login Number: L09080144

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRDS01	01	08/06/09	08/11/09	5.1					14		08/12/09	.9	14	
PRDS01	01	08/06/09	08/11/09	5.1	14				14		08/12/09	.9	14	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1464714
Report generated 08/13/2009 08:47

Login Number: L09080144
Instrument Id: HPMS8
Workgroup (AAB#): WG309491

Method: 8260
CAL ID: HPMS8-30-JUL-09
Matrix: Leachate

Sample Number	Dilution	Tag	1	2	3	4
L09080144-01	10.0	DL01	88.0	91.2	96.1	98.6
WG309491-01	1.00	01	86.4	91.6	95.9	98.2
WG309491-02	1.00	01	90.3	92.4	93.8	98.0
WG309491-03	1.00	01	88.6	93.7	94.5	97.1

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1464723
Report generated: 08/13/2009 08:48

METHOD BLANK SUMMARY

Login Number:	L09080144	Work Group:	WG309491
Blank File ID:	8M355728	Blank Sample ID:	WG309491-01
Prep Date:	08/12/09 10:45	Instrument ID:	HPMS8
Analyzed Date:	08/12/09 10:45	Method:	8260B
Analyst:	MES		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309491-02	8M355729	08/12/09 11:17	01
LCS2	WG309491-03	8M355730	08/12/09 11:49	01
PRDS01	L09080144-01	8M355731	08/12/09 12:22	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1464715
Report generated 08/13/2009 08:47

Microbac Laboratories Inc.

METHOD BLANK REPORT

00082890

Login Number:L09080144 Prep Date:08/12/09 10:45 Sample ID:WG309491-01
Instrument ID:HPMS8 Run Date:08/12/09 10:45 Prep Method:5030C
File ID:8M355728 Analyst:MES Method:8260B
Workgroup (AAB#):WG309491 Matrix:Leachate Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS8-30-JUL-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Benzene	0.125	5.00	0.125	1	U
Carbon tetrachloride	0.250	5.00	0.250	1	U
Chlorobenzene	0.125	5.00	0.125	1	U
Chloroform	0.125	5.00	0.125	1	U
1,2-Dichloroethane	0.250	5.00	0.250	1	U
1,1-Dichloroethene	0.500	5.00	0.500	1	U
Methyl Ethyl Ketone	2.50	10.0	2.50	1	U
Tetrachloroethene	0.250	5.00	0.250	1	U
Trichloroethene	0.250	5.00	0.250	1	U
Vinyl chloride	0.250	10.0	0.250	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	91.6	86 - 118	PASS
1,2-Dichloroethane-d4	86.4	80 - 120	PASS
Toluene-d8	98.2	88 - 110	PASS
4-Bromofluorobenzene	95.9	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1464716
13-AUG-2009 08:47

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00082891

Login Number: L09080144 Analyst: MES Prep Method: 5030C
Instrument ID: HPMS8 Matrix: Leachate Method: 8260B
Workgroup (AAB#): WG309491 Units: ug/L
QC Key: STD Lot #: STD34517

Sample ID: WG309491-02 LCS File ID: 8M355729 Run Date: 08/12/2009 11:17
Sample ID: WG309491-03 LCS2 File ID: 8M355730 Run Date: 08/12/2009 11:49

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Benzene	20.0	19.1	95.5	20.0	18.1	90.3	5.60	80 - 121	20	
Carbon tetrachloride	20.0	19.7	98.5	20.0	18.3	91.7	7.12	65 - 140	20	
Chlorobenzene	20.0	19.7	98.5	20.0	18.9	94.6	4.10	80 - 120	20	
Chloroform	20.0	19.3	96.5	20.0	18.5	92.3	4.45	80 - 125	20	
1,2-Dichloroethane	20.0	18.8	93.9	20.0	18.4	92.0	1.98	80 - 129	20	
1,1-Dichloroethene	20.0	18.7	93.3	20.0	17.4	87.1	6.79	80 - 132	20	
Methyl Ethyl Ketone	20.0	19.2	96.1	20.0	19.2	96.0	0.105	30 - 150	20	
Tetrachloroethene	20.0	19.4	97.1	20.0	18.5	92.6	4.78	80 - 124	20	
Trichloroethene	20.0	20.1	100	20.0	19.1	95.6	4.77	80 - 122	20	
Vinyl chloride	20.0	19.9	99.4	20.0	18.3	91.5	8.31	65 - 140	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	90.3	88.6	80 - 120	PASS
Dibromofluoromethane	92.4	93.7	86 - 118	PASS
4-Bromofluorobenzene	93.8	94.5	86 - 115	PASS
Toluene-d8	98.0	97.1	88 - 110	PASS

* FAILS %REC LIMIT

FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1464080
Report generated: 08/13/2009 08:47

BFB

Login Number: L09080144
Instrument: HPMS8
Analyst: MES
Workgroup: WG308451

Tune ID: WG308451-01
Run Date: 07/30/2009
Run Time: 11:31
File ID: 8M355440
Cal ID: HPMS8 -

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	29.3	19346	PASS
75.0	95.0	30.0	60.0	50.9	33589	PASS
95.0	95.0	100	100	100	65962	PASS
96.0	95.0	5.00	9.00	6.46	4261	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	73.5	48482	PASS
175	174	5.00	9.00	7.69	3726	PASS
176	174	95.0	101	96.9	46989	PASS
177	176	5.00	9.00	7.15	3362	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG308451-02	STD	01	07/30/2009 11:57	
WG308451-03	STD	01	07/30/2009 12:31	
WG308451-04	STD	01	07/30/2009 13:09	
WG308451-05	STD	01	07/30/2009 13:41	
WG308451-06	STD	01	07/30/2009 14:13	
WG308451-07	STD	01	07/30/2009 14:46	
WG308451-08	STD-CCV	01	07/30/2009 15:18	
WG308451-09	STD	01	07/30/2009 15:50	
WG308451-10	STD	01	07/30/2009 16:24	
WG308451-11	STD	01	07/30/2009 16:56	
WG308451-12	SSCV	01	07/30/2009 18:00	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1464720
Report generated 08/13/2009 08:47

BFB

Login Number: L09080144
Instrument: HPMS8
Analyst: MES
Workgroup: WG309490

Tune ID: WG309490-01
Run Date: 08/12/2009
Run Time: 08:42
File ID: 8M355724
Cal ID: HPMS8-30-JUL-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	27.4	14471	PASS
75.0	95.0	30.0	60.0	52.9	27888	PASS
95.0	95.0	100	100	100	52725	PASS
96.0	95.0	5.00	9.00	7.05	3715	PASS
173	174	0	2.00	0.902	377	PASS
174	95.0	50.0	100	79.3	41789	PASS
175	174	5.00	9.00	7.59	3171	PASS
176	174	95.0	101	95.8	40050	PASS
177	176	5.00	9.00	6.44	2580	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG309490-02	CCV	01	08/12/2009 10:13	
WG309491-01	BLANK	01	08/12/2009 10:45	
WG309491-02	LCS	01	08/12/2009 11:17	
WG309491-03	LCS2	01	08/12/2009 11:49	
L09080144-01	PRDS01	DL01	08/12/2009 12:22	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1464720
Report generated 08/13/2009 08:47

Login Number: L09080144 **Instrument ID:** HPMS8
Analytical Method: 8260B **Initial Calibration Date:** 30-JUL-09 16:56
ICAL Workgroup: WG308451 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.4907	5.30		
Chloroform	CCC	0.4887	6.11		
Vinyl Chloride	CCC	0.3364	8.80		
1,1,2,2-Tetrachloroethane	SPCC	0.5066	12.1		
1,1-Dichloroethane	SPCC	0.5784	5.17		
Bromoform	SPCC	0.1824	7.30		
Chlorobenzene	SPCC	0.8929	7.75		
Chloromethane	SPCC	0.5509	14.9		
1,2-Dichloroethane		0.3925	6.67		
2-Butanone		0.1152	4.95		
Benzene		1.077	9.36		
Carbon Tetrachloride		0.3781	5.83		
Tetrachloroethene		0.2478	6.97		
Trichloroethene		0.2498	7.56		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

INT_CAL - Modified 03/06/2008
PDF File ID: 1464717
Report generated 08/13/2009 08:47

Login Number: L09080144
Analytical Method: 8260B
Instrument ID: HPMS8
Initial Calibration Date: 30-JUL-09 16:56
Column ID: F

Analyte	WG308451-02			WG308451-03			WG308451-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	5321.00000	0.4515	1.00	14794.0000	0.4969
Chloroform	0.300	4907.00000	0.5286	0.400	5856.00000	0.4969	1.00	14946.0000	0.5020
Vinyl Chloride	NA	NA	NA	0.400	4281.00000	0.3633	1.00	11052.0000	0.3712
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	2232.00000	0.4424	1.00	6103.00000	0.4887
1,1-Dichloroethane	NA	NA	NA	0.400	7133.00000	0.6053	1.00	17475.0000	0.5870
Bromoform	NA	NA	NA	NA	NA	NA	1.00	3821.00000	0.1670
Chlorobenzene	NA	NA	NA	0.400	9094.00000	0.9951	1.00	20675.0000	0.9034
Chloromethane	NA	NA	NA	0.400	0	0	1.00	24210.0000	0.8132
1,2-Dichloroethane	NA	NA	NA	0.400	4744.00000	0.4025	1.00	11581.0000	0.3890
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	14165.0000	1.202	1.00	34594.0000	1.162
Carbon Tetrachloride	NA	NA	NA	0.400	4085.00000	0.3466	1.00	11635.0000	0.3908
Tetrachloroethene	NA	NA	NA	0.400	2209.00000	0.2417	1.00	5918.00000	0.2586
Trichloroethene	NA	NA	NA	0.400	2511.00000	0.2131	1.00	7648.00000	0.2569

INT_CAL - Modified 03/06/2008
PDF File ID: 1464717
Report generated 08/13/2009 08:47

Login Number: L09080144
Analytical Method: 8260B
Instrument ID: HPMS8
Initial Calibration Date: 30-JUL-09 16:56
Column ID: F

Analyte	WG308451-05			WG308451-06			WG308451-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	29966.0000	0.5170	5.00	69972.0000	0.4821	20.0	291916.000	0.5195
Chloroform	2.00	29692.0000	0.5123	5.00	69889.0000	0.4816	20.0	283701.000	0.5049
Vinyl Chloride	2.00	20469.0000	0.3532	5.00	46935.0000	0.3234	20.0	200491.000	0.3568
1,1,2,2-Tetrachloroethane	2.00	15969.0000	0.6364	5.00	32150.0000	0.5174	20.0	135525.000	0.5323
1,1-Dichloroethane	2.00	34917.0000	0.6024	5.00	83126.0000	0.5728	20.0	338154.000	0.6018
Bromoform	2.00	9227.00000	0.2026	5.00	19379.0000	0.1743	20.0	86287.0000	0.1901
Chlorobenzene	2.00	44052.0000	0.9673	5.00	97488.0000	0.8767	20.0	414031.000	0.9121
Chloromethane	2.00	40953.0000	0.7066	5.00	87147.0000	0.6005	20.0	358114.000	0.6373
1,2-Dichloroethane	2.00	25316.0000	0.4368	5.00	56673.0000	0.3905	20.0	230760.000	0.4107
2-Butanone	NA	NA	NA	5.00	16721.0000	0.1152	20.0	69114.0000	0.1230
Benzene	2.00	67281.0000	1.161	5.00	153288.000	1.056	20.0	623031.000	1.109
Carbon Tetrachloride	2.00	22971.0000	0.3963	5.00	53903.0000	0.3714	20.0	228271.000	0.4062
Tetrachloroethene	2.00	12482.0000	0.2741	5.00	28684.0000	0.2580	20.0	115069.000	0.2535
Trichloroethene	2.00	15296.0000	0.2639	5.00	35687.0000	0.2459	20.0	152095.000	0.2707

INT_CAL - Modified 03/06/2008
PDF File ID: 1464717
Report generated 08/13/2009 08:47

Login Number: L09080144
Analytical Method: 8260B
Instrument ID: HPMS8
Initial Calibration Date: 30-JUL-09 16:56
Column ID: F

Analyte	WG308451-08			WG308451-09			WG308451-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	726265.000	0.5120	100	1326566.00	0.4573	200	2930142.00	0.4890
Chloroform	50.0	690688.000	0.4869	100	1255610.00	0.4328	200	2711615.00	0.4525
Vinyl Chloride	50.0	470367.000	0.3316	100	857375.000	0.2956	200	1772744.00	0.2958
1,1,2,2-Tetrachloroethane	50.0	340754.000	0.5114	100	611590.000	0.4488	200	1305271.00	0.4751
1,1-Dichloroethane	50.0	828636.000	0.5842	100	1498507.00	0.5166	200	3340100.00	0.5574
Bromoform	50.0	226086.000	0.1943	100	413524.000	0.1711	200	899165.000	0.1775
Chlorobenzene	50.0	1028134.00	0.8834	100	1906608.00	0.7889	200	4135481.00	0.8162
Chloromethane	50.0	836285.000	0.5895	100	1477731.00	0.5094	NA	NA	NA
1,2-Dichloroethane	50.0	557958.000	0.3933	100	1019802.00	0.3516	200	2192721.00	0.3659
2-Butanone	50.0	169518.000	0.1195	100	309802.000	0.1068	200	689261.000	0.1150
Benzene	50.0	1497580.00	1.056	100	2709235.00	0.9339	200	5629109.00	0.9394
Carbon Tetrachloride	50.0	558514.000	0.3937	100	1016200.00	0.3503	200	2215846.00	0.3698
Tetrachloroethene	50.0	286343.000	0.2460	100	527996.000	0.2185	200	1176298.00	0.2322
Trichloroethene	50.0	375233.000	0.2645	100	680596.000	0.2346	200	1492757.00	0.2491

INT_CAL - Modified 03/06/2008
PDF File ID: 1464717
Report generated 08/13/2009 08:47

Microbac Laboratories Inc.
INITIAL CALIBRATION DATA

00082898

Login Number: L09080144
Analytical Method: 8260B
Instrument ID: HPMS8
Initial Calibration Date: 30-JUL-09 16:56
Column ID: F

Analyte	WG308451-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
Chloroform	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
2-Butanone	300	1013951.00	0.1116
Benzene	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1464717
Report generated 08/13/2009 08:47

Login Number: L09080144 Run Date: 07/30/2009 Sample ID: WG308451-12
Instrument ID: HPMS8 Run Time: 18:00 Method: 8260B
File ID: 8M355452 Analyst: MES QC Key: STD
ICal Workgroup: WG308451 Cal ID: HPMS8 - 30-JUL-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.3	ug/L	0.497	1.70	30	
1,1-Dichloroethene	CCC	20.0	20.7	ug/L	0.509	3.70	30	
Vinyl Chloride	CCC	20.0	21.8	ug/L	0.367	9.10	30	
Chlorobenzene	SPCC	20.0	20.5	ug/L	0.915	2.50	30	
Chloromethane	SPCC	20.0	20.7	ug/L	0.668	3.30	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	20.6	ug/L	0.521	2.80	30	
1,1-Dichloroethane	SPCC	20.0	20.4	ug/L	0.589	1.90	30	
Bromoform	SPCC	20.0	20.5	ug/L	0.187	2.40	30	
Benzene		20.0	20.1	ug/L	1.08	0.300	30	
Carbon Tetrachloride		20.0	20.6	ug/L	0.390	3.10	30	
1,2-Dichloroethane		20.0	20.2	ug/L	0.397	1.10	30	
2-Butanone		20.0	21.1	ug/L	0.122	5.70	30	
Tetrachloroethene		20.0	20.1	ug/L	0.249	0.500	30	
Trichloroethene		20.0	21.4	ug/L	0.267	7.00	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082900

Login Number: L09080144 Run Date: 08/12/2009 Sample ID: WG309490-02
Instrument ID: HPMS8 Run Time: 10:13 Method: 8260B
File ID: 8M355727 Analyst: MES QC Key: STD
Workgroup (AAB#): WG309491 Cal ID: HPMS8 - 30-JUL-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	46.0	ug/L	0.450	7.90	20	
1,1-Dichloroethene	CCC	50.0	46.2	ug/L	0.453	7.63	20	
Vinyl Chloride	CCC	50.0	46.5	ug/L	0.313	7.04	20	
1,2-Dichloropropane	CCC	50.0	46.1	ug/L	0.298	7.80	20	
Ethylbenzene	CCC	50.0	47.4	ug/L	0.450	5.13	20	
Toluene	CCC	50.0	46.2	ug/L	1.22	7.68	20	
Chlorobenzene	SPCC	50.0	47.0	ug/L	0.839	6.04	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	48.2	ug/L	0.489	3.52	40	
1,1-Dichloroethane	SPCC	50.0	45.6	ug/L	0.528	8.71	40	
Bromoform	SPCC	50.0	51.5	ug/L	0.188	2.96	40	
Chloromethane	SPCC	50.0	40.9	ug/L	0.528	18.3	40	
Benzene		50.0	45.0	ug/L	0.969	10.1	40	
Carbon Tetrachloride		50.0	48.3	ug/L	0.366	3.31	40	
1,2-Dichloroethane		50.0	45.6	ug/L	0.358	8.76	40	
2-Butanone		50.0	49.0	ug/L	0.113	2.05	40	
Tetrachloroethene		50.0	47.2	ug/L	0.234	5.68	40	
Trichloroethene		50.0	49.3	ug/L	0.247	1.32	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1464721
Report generated 08/13/2009 08:48

Microbac Laboratories Inc.

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00082901

Login Number: L09080144
Instrument ID: HPMS8
Workgroup (AAB#): WG309491

CCV Number: WG309490-02
CAL ID: HPMS8-30-JUL-09
Matrix: TCLP

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG309490-02	NA	NA	325122	567232	713685
Upper Limit	NA	NA	650244	1134464	1427370
Lower Limit	NA	NA	162561	283616	356843
L09080144-01	10.0	DL01	301159	559829	736392
WG309491-01	1.00	01	310205	573910	750594
WG309491-02	1.00	01	324272	560545	706275
WG309491-03	1.00	01	325070	568667	721245

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1464722
Report generated 08/13/2009 08:48

Login Number: L09080144
Instrument ID: HPMS8
Workgroup (AAB#): WG309491

CCV Number: WG309490-02
CAL ID: HPMS8-30-JUL-09
Matrix: TCLP

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG309490-02	NA	NA	17.65	14.63	10.76
Upper Limit	NA	NA	18.15	15.13	11.26
Lower Limit	NA	NA	17.15	14.13	10.26
L09080144-01	10.0	DL01	17.65	14.63	10.77
WG309491-01	1.00	01	17.65	14.63	10.76
WG309491-02	1.00	01	17.65	14.63	10.76
WG309491-03	1.00	01	17.65	14.63	10.77

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1464724
Report generated 08/13/2009 08:48

2.2 Metals Data

2.2.1 Metals I C P Data

2.2.1.1 Summary Data

LABORATORY REPORT

00082906

L09080144

08/13/09 10:03

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS01	L09080144-01	6010B	1	07-AUG-09

Report Number: **L09080144**
Report Date : **August 13, 2009**

00082907

Sample Number: **L09080144-01**
Client ID: **PRDS01**
Matrix: **Leachate**
Workgroup Number: **WG309405**
Collect Date: **08/06/2009 13:45**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **3015**
Analytical Method: **6010B**
Analyst: **PDM**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **08/11/2009 07:13**
Cal Date: **08/11/2009 09:58**
Run Date: **08/11/2009 11:59**
File ID: **P2.081109.115908**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	1	.1	D004	5
Barium, TCLP	7440-39-3	1.06		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1	2.26		1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

2.2.1.2 QC Summary Data

Example 6010 Calculations
Perkin Elmer Optima 4300 DV

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Example 6010 Calculations
Thermo Scientific IRIS Advantage

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Example 6010 Calculations
Thermo Scientific iCAP 6500

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and four standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

TCLP Non-Volatile

Analyst(s): Ruc
Date: 08-10-09

Analyst/Date		Analyst/Date	
Ruc 8-10-09		Ruc 8-11-09	
Time On	Temp On °C	Time Off	Temp Off °C
1330	24	0630	23

Jug #	Sample #	Tests	Method	Fluid #	Matrix*	%Solid	Size Reduction Yes	Size Reduction No	Int. Wt. (g)	Fluid Vol. (mL)
D	08-144-01	ME	1311	FF758	S/S	100		✓	100.07	2000
D	08-149-03				S		✓		100.08	
D	05						✓		100.01	
D	08-154-01						✓		100.04	
D	08-171-01							✓	100.02	
D	02							✓	100.00	
D	08-178-01				S/S			✓	100.06	
D	02				1			✓	100.05	
N/A	FBLK				N/A	N/A		✓	2000	
2	08-149-04			Filtered	W	<5		✓	100	100

Ruc 8-10-09

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: Filtered SY processed @1300 - Ruc

Peer Review By: _____ Supervisor Review: _____

Microbac Laboratories Inc.
Microwave Digestion Log

00082913

Workgroup: WG309389
Analyst: VC
Spike Analyst: VC
Run Date: 08/11/2009 07:13
Method: 3015

SOP: ME407 Revison 10
Spike Solution: STD34340
Spike Witness: BRG
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG309389-02	BLANK	17	5 mL	50 mL	203.443 g	203.423 g		
2	WG309362-01	FBLK	17	5 mL	50 mL	204.539 g	204.526 g		
3	WG309389-03	LCS	17	5 mL	50 mL	211.026 g	211.009 g	5 mL	
4	L09080144-01	SAMP	17	5 mL	50 mL	208.67 g	208.649 g		08/11/09
5	L09080149-03	SAMP	17	5 mL	50 mL	208.998 g	208.987 g		08/17/09
6	L09080149-04	SAMP	17	5 mL	50 mL	209.956 g	209.943 g		08/17/09
7	L09080149-05	SAMP	17	5 mL	50 mL	210.468 g	210.456 g		08/17/09
8	L09080154-01	SAMP	17	5 mL	50 mL	210.544 g	210.523 g		08/17/09
9	L09080171-01	SAMP	17	5 mL	50 mL	211.597 g	211.596 g		08/14/09
10	L09080171-02	SAMP	17	5 mL	50 mL	211.096 g	211.097 g		08/14/09
11	L09080178-01	SAMP	17	5 mL	50 mL	211.281 g	211.275 g		08/11/09
12	WG309389-01	REF	17	5 mL	50 mL	207.207 g	207.199 g		
13	L09080178-02	SAMP	17	5 mL	50 mL	207.207 g	207.199 g		08/11/09
14	WG309389-04	MS	17	5 mL	50 mL	209.253 g	209.251 g	5 mL	
15	WG309389-05	MSD	17	5 mL	50 mL	211.968 g	211.96 g	5 mL	

Analyst: Vicki Collins

Reviewer: Brenda Gregory

MW_DIG - Modified 07/02/2008
PDF ID: 1462694
Report generated: 08/11/2009 08:21

Microbac®

Microbac Laboratories Inc.

Instrument Run Log

Instrument: PE-ICP2 Dataset: 081109HR.CSV
Analyst1: PDM Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 10
Maintenance Log ID: 29751

Calibration Std: STD34504 ICV/CCV Std: STD34469 Post Spike: STD34340
ICSA: STD34193 ICSAB: STD34508 Int. Std: STD34564

Workgroups: 309405,308987,309378,309352

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	P2.081109.093218	WG309461-01	Calibration Point		1		08/11/09 09:32
2	P2.081109.093852	WG309461-02	Calibration Point		1		08/11/09 09:38
3	P2.081109.094523	WG309461-03	Calibration Point		1		08/11/09 09:45
4	P2.081109.095201	WG309461-04	Calibration Point		1		08/11/09 09:52
5	P2.081109.095841	WG309461-05	Calibration Point		1		08/11/09 09:58
6	P2.081109.100423	WG309461-06	Initial Calibration Verification		1		08/11/09 10:04
7	P2.081109.101104	WG309461-07	Initial Calib Blank		1		08/11/09 10:11
8	P2.081109.101742	WG309461-08	Interference Check		1		08/11/09 10:17
9	P2.081109.102322	WG309461-09	Interference Check		1		08/11/09 10:23
10	P2.081109.102903	WG309461-10	CCV		1		08/11/09 10:29
11	P2.081109.103541	WG309461-11	CCB		1		08/11/09 10:35
12	P2.081109.112442	WG309461-12	CCV		1		08/11/09 11:24
13	P2.081109.113126	WG309461-13	CCB		1		08/11/09 11:31
14	P2.081109.113912	WG309389-02	Method/Prep Blank	5/50	1		08/11/09 11:39
15	P2.081109.114546	WG309389-03	Laboratory Control S	5/50	1		08/11/09 11:45
16	P2.081109.115226	WG309362-01	Fluid Blank		1		08/11/09 11:52
17	P2.081109.115908	L09080144-01	PRDS01	5/50	1		08/11/09 11:59
18	P2.081109.120544	WG309405-01	Post Digestion Spike		1	L09080144-01	08/11/09 12:05
19	P2.081109.121229	WG309405-02	Serial Dilution		5	L09080144-01	08/11/09 12:12
20	P2.081109.121909	L09080178-01	PRDS02	5/50	1		08/11/09 12:19
21	P2.081109.122546	WG309389-01	Reference Sample		1	L09080178-02	08/11/09 12:25
22	P2.081109.123230	WG309389-04	Matrix Spike	5/50	1	L09080178-02	08/11/09 12:32
23	P2.081109.123914	WG309389-05	Matrix Spike Duplica	5/50	1	L09080178-02	08/11/09 12:39
24	P2.081109.124600	WG309461-14	CCV		1		08/11/09 12:46
25	P2.081109.125240	WG309461-15	CCB		1		08/11/09 12:52
26	P2.081109.125916	L09080149-03	GT090086	5/50	1		08/11/09 12:59
27	P2.081109.130554	L09080149-04	GT090087	5/50	1		08/11/09 13:05
28	P2.081109.131236	L09080149-05	GT090088	5/50	1		08/11/09 13:12
29	P2.081109.133008	L09080154-01	GM090046	5/50	1		08/11/09 13:30
30	P2.081109.133646	L09080171-01	TANK \#2 - 1	5/50	1		08/11/09 13:36
31	P2.081109.134331	L09080171-02	TANK \#2 - 2	5/50	1		08/11/09 13:43
32	P2.081109.135012	WG309461-16	CCV		1		08/11/09 13:50
33	P2.081109.135651	WG309461-17	CCB		1		08/11/09 13:56
34	P2.081109.140329	WG308941-02	Method/Prep Blank	50/50	1		08/11/09 14:03
35	P2.081109.141009	WG308941-03	Laboratory Control S	50/50	1		08/11/09 14:10
36	P2.081109.141643	L09080054-01	DRL-Z-OUTLET 006	50/50	1		08/11/09 14:16
37	P2.081109.142326	WG308987-01	Post Digestion Spike		1	L09080054-01	08/11/09 14:23

Page: 1 Approved: August 12, 2009

Maren Berry

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Instrument Run Log

Instrument: PE-ICP2 Dataset: 081109HR.CSV
Analyst1: PDM Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 10
Maintenance Log ID: 29751

Calibration Std: STD34504 ICV/CCV Std: STD34469 Post Spike: STD34340
ICSA: STD34193 ICSAB: STD34508 Int. Std: STD34564

Workgroups: 309405,308987,309378,309352

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	P2.081109.143011	WG308987-02	Serial Dilution		5	L09080054-01	08/11/09 14:30
39	P2.081109.143644	WG308941-01	Reference Sample		1	L09080055-02	08/11/09 14:36
40	P2.081109.144324	WG308941-04	Matrix Spike	50/50	1	L09080055-02	08/11/09 14:43
41	P2.081109.145029	WG308941-05	Matrix Spike Duplica	50/50	1	L09080055-02	08/11/09 14:50
42	P2.081109.145708	WG309461-18	CCV		1		08/11/09 14:57
43	P2.081109.150351	WG309461-19	CCB		1		08/11/09 15:03
44	P2.081109.151035	L09080040-02	EFFLUENT/COMP	50/50	1		08/11/09 15:10
45	P2.081109.151714	L09080041-02	CATEGORICAL/COMP	50/50	1		08/11/09 15:17
46	P2.081109.152358	L09080041-04	MANHOLE/COMP	50/50	1		08/11/09 15:23
47	P2.081109.153043	L09080043-01	OUTFALL/COMP.	50/50	1		08/11/09 15:30
48	P2.081109.153721	L09080045-01	NMEFF001/E090/4293	50/50	1		08/11/09 15:37
49	P2.081109.154405	L09080055-01	DRL-Z-SS-1	50/50	1		08/11/09 15:44
50	P2.081109.155046	WG309461-20	CCV		1		08/11/09 15:50
51	P2.081109.155724	WG309461-21	CCB		1		08/11/09 15:57
52	P2.081109.160418	L09080095-01	T1360		100		08/11/09 16:04
53	P2.081109.161052	L09080095-05	P1343	50/50	100		08/11/09 16:10
54	P2.081109.161735	L09080172-02	0908-035-1		100		08/11/09 16:17
55	P2.081109.162415	L09080150-01	MW95-1-0908	50/50	100		08/11/09 16:24
56	P2.081109.163053	WG309352-01	Post Digestion Spike		100	L09080150-01	08/11/09 16:30
57	P2.081109.163735	WG309352-02	Serial Dilution		500	L09080150-01	08/11/09 16:37
58	P2.081109.164416	WG309316-01	Reference Sample		100	L09080150-02	08/11/09 16:44
59	P2.081109.165053	WG309316-04	Matrix Spike	50/50	100	L09080150-02	08/11/09 16:50
60	P2.081109.165737	WG309316-05	Matrix Spike Duplica	50/50	100	L09080150-02	08/11/09 16:57
61	P2.081109.170420	L09080150-05	CLAMW12-0908	50/50	100		08/11/09 17:04
62	P2.081109.171105	WG309461-22	CCV		1		08/11/09 17:11
63	P2.081109.171745	WG309461-23	CCB		1		08/11/09 17:17
64	P2.081109.172424	L09080150-06	DUP-01-0908	50/50	100		08/11/09 17:24
65	P2.081109.173100	L09080150-08	LF1MW04A-0908	50/50	100		08/11/09 17:31
66	P2.081109.173743	L09080150-09	MW92-2-0908	50/50	100		08/11/09 17:37
67	P2.081109.174423	L09080150-10	LF7MW04-0908	50/50	100		08/11/09 17:44
68	P2.081109.175057	L09080150-11	LF1MW01B-0908	50/50	100		08/11/09 17:50
69	P2.081109.175738	L09080150-12	GPMW08-0908	50/50	100		08/11/09 17:57
70	P2.081109.180421	L09080158-08	RW-1	50/50	2		08/11/09 18:04
71	P2.081109.181103	L09080158-11	GM-5B	50/50	2		08/11/09 18:11
72	P2.081109.181741	WG309461-24	CCV		1		08/11/09 18:17
73	P2.081109.182420	WG309461-25	CCB		1		08/11/09 18:24

Page: 2 Approved: August 12, 2009

Maren Berry

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument:	PE-ICP2	Dataset:	081109HR.CSV		
Analyst1:	PDM	Analyst2:	N/A		
Method:	6010B	SOP:	ME600E	Rev:	10
Maintenance Log ID:	29751				

Calibration Std:	STD34504	ICV/CCV Std:	STD34469	Post Spike:	STD34340
ICSA:	STD34193	ICSAB:	STD34508	Int. Std:	STD34564

Workgroups: 309405,308987,309378,309352

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time

Comments

Seq.	Rerun	Dil.	Reason	Analytes
52			Sample was re-analyzed unnecessarily therefore no results were reported.	
54			Sample was re-analyzed unnecessarily therefore no results were reported.	

Page: 3 Approved: August 12, 2009

Maren Berry

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Data Checklist

Date: 11-AUG-2009
Analyst: PDM
Analyst: NA
Method: 6010B
Instrument: PE-ICP2
Curve Workgroup: 309461
Runlog ID: 29572
Analytical Workgroups: 309405,308987,309378,309352

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	0144,0171,0178,0041,0045,0095,0150
	0158
Client Forms	X
Level X	
Level 3	0178
Level 4	0144,0171,0150
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	PDM
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
12-AUG-2009
Pierce Morris

Secondary Reviewer:
12-AUG-2009
Maren Berry

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-12-2009 13:14:07

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00082918

Analytical Method: 6010B AAB#: WG309405

Login Number: L09080144

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRDS01	01	08/06/09	08/10/09	4			08/11/09	4.7	180		08/11/09	.9	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1463470
Report generated 08/11/2009 15:25

METHOD BLANK SUMMARY

Login Number:	L09080144	Work Group:	WG309405
Blank File ID:	P2.081109.113912	Blank Sample ID:	WG309389-02
Prep Date:	08/11/09 07:13	Instrument ID:	PE-ICP2
Analyzed Date:	08/11/09 11:39	Method:	6010B
Analyst:	PDM		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309389-03	P2.081109.114546	08/11/09 11:45	01
PRDS01	L09080144-01	P2.081109.115908	08/11/09 11:59	01

Report Name: BLANK_SUMMARY
PDF File ID: 1463471
Report generated 08/11/2009 15:25

Microbac Laboratories Inc.

METHOD BLANK REPORT

00082920

Login Number:L09080144 Prep Date:08/11/09 07:13 Sample ID:WG309389-02
Instrument ID:PE-ICP2 Run Date:08/11/09 11:39 Prep Method:3015
File ID:P2.081109.113912 Analyst:PDM Method:6010B
Workgroup (AAB#):WG309405 Matrix:Leachate Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:PE-ICP-11-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Arsenic, TCLP	0.100	1.00	0.100	1	U
Barium, TCLP	0.0250	0.100	-0.0356	1	U
Cadmium, TCLP	0.0250	0.100	0.0250	1	U
Chromium, TCLP	0.0250	0.200	0.0250	1	U
Lead, TCLP	0.100	1.00	0.100	1	U
Selenium, TCLP	0.400	0.800	0.400	1	U
Silver, TCLP	0.0500	0.100	0.0500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1463472
11-AUG-2009 15:25

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309389-03
Instrument ID: PE-ICP2 Run Time: 11:45 Prep Method: 3015
File ID: P2.081109.114546 Analyst: PDM Method: 6010B
Workgroup (AAB#): WG309405 Matrix: Leachate Units: mg/L
QC Key: STD Lot#: STD34340 Cal ID: PE-ICP-11-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Arsenic, TCLP	2.00	2.09	105	85 - 115	
Barium, TCLP	5.00	5.19	104	85 - 115	
Cadmium, TCLP	0.250	0.257	103	85 - 115	
Chromium, TCLP	2.50	2.55	102	85 - 115	
Lead, TCLP	2.50	2.49	99.5	85 - 115	
Selenium, TCLP	2.00	2.05	102	85 - 115	
Silver, TCLP	2.00	2.15	107	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 1463473
Report generated: 08/11/2009 15:25

Loginnum:L09080144 Cal ID: PE-ICP2- Worknum:WG309405
Instrument ID:PE-ICP2 Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG309389-01 File ID:P2.081109.122546 Dil:1 Matrix:WATER
Sample ID:WG309389-04 MS File ID:P2.081109.123230 Dil:1 Units:mg/L
Sample ID:WG309389-05 MSD File ID:P2.081109.123914 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Arsenic, TCLP	ND	2.00	1.96	97.8	2.00	1.97	98.6	0.836	80 - 120	20	
Barium, TCLP	1.47	5.00	6.65	104	5.00	6.66	104	0.251	80 - 120	20	
Cadmium, TCLP	ND	0.250	0.245	98.2	0.250	0.247	98.6	0.459	80 - 120	20	
Chromium, TCLP	ND	2.50	2.58	103	2.50	2.59	104	0.154	80 - 120	20	
Lead, TCLP	0.574	2.50	3.09	100	2.50	3.04	98.7	1.44	80 - 120	20	
Selenium, TCLP	ND	2.00	2.05	103	2.00	1.98	99.1	3.41	80 - 120	20	
Silver, TCLP	ND	2.00	2.04	102	2.00	2.06	103	0.930	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID:1463474
Report generated 08/11/2009 15:25

Microbac Laboratories Inc.
Serial Dilution Report

Login: L09080144 **Worknum:** WG309405
Instrument: PE-ICP2 **Method:** 6010B
Serial Dil: WG309405-02 **File ID:** P2.081109.121229 **Dil:** 5 **Units:** mg/L
Sample: L09080144-01 **File ID:** P2.081109.115908 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Arsenic	ND	U	ND	U		
Barium	.106	X	.0925	X	12.70	
Cadmium	ND	U	ND	U		
Chromium	ND	U	ND	U		
Lead	.226	X	.2325	F	2.88	
Selenium	ND	U	ND	U		
Silver	ND	U	ND	U		

U = Result is below MDL.
F = Result is greater than or equal to MDL and less than the RL.
X = Result is greater than or equal to RL and less than 50 times the MDL.
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 50 times the MDL.

SERIAL_DIL - Modified 09/22/2008
PDF File ID: 1463468
08/11/2009 15:25

Sample Login ID: L09080144 **Worknum:** WG309405
Instrument ID: PE-ICP2 **Method:** 6010B
Post Spike ID: WG309405-01 **File ID:** P2.081109.120544 **Dil:** 1 **Units:** mg/L
Sample ID: L09080144-01 **File ID:** P2.081109.115908 **Dil:** 1 **Matrix:** Leachate

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ARSENIC	0.199		0	U	.2	99.4	75 - 125	
BARIUM	0.620		0.106		.5	104.9	75 - 125	
CADMIUM	0.0246		0	U	.025	98.5	75 - 125	
CHROMIUM	0.257		0	U	.25	102.9	75 - 125	
LEAD	0.456		0.226		.25	101.1	75 - 125	
SELENIUM	0.196		0	U	.2	98.2	75 - 125	
SILVER	0.206		0	U	.2	103.1	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1463469
Report generated: 08/11/2009 15:25

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	**L09080144**	Workgroup (AAB#):	**WG309405**
Analytical Method:	**6010B**	Instrument ID:	**PE-ICP2**
ICAL Worknum:	**WG309461**	Initial Calibration Date:	**11-AUG-2009 09:58**

	WG309461-01		WG309461-02		WG309461-03		WG309461-04		WG309461-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ARSENIC	0	-2.12	NA	NA	.008	3.25	.4	118	.8	235	.999995	
BARIUM	0	-111	.01	526	.02	1080	1	52900	2	103000	.999925	
CADMIUM	0	19.6	.0005	12.0	.001	31.2	.05	1150	.1	2250	.999949	
CHROMIUM	0	38.9	.005	124	.01	259	.5	12900	1	25100	.999941	
LEAD	0	29.2	.005	6.47	.01	26.0	.5	1050	1	2110	.99999	
SELENIUM	0	-3.39	NA	NA	.008	3.30	.4	60.1	.8	120	.999872	
SILVER	0	42.8	.004	347	.008	672	.4	29500	.8	56700	.999827	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

INT_CAL_ICP - Modified 03/06/2008
PDF File ID: 1463477
Report generated: 11-AUG-2009 15:25

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309461-07
Instrument ID: PE-ICP2 Run Time: 10:11 Method: 6010B
File ID: P2.081109.101104 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309405 Cal ID: PE-ICP2 - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.01	.1	.01	U
BARIUM	.0025	.01	.0025	U
CADMIUM	.0025	.01	.0025	U
CHROMIUM	.0025	.02	.0025	U
LEAD	.01	.1	.01	U
SELENIUM	.04	.08	.04	U
SILVER	.005	.01	.005	U

ICB - Modified 07/14/2009
PDF File ID: 1463479
Report generated 08/11/2009 15:25

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082927

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309461-11
Instrument ID: PE-ICP2 Run Time: 10:35 Method: 6010B
File ID: P2.081109.103541 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	-0.00331	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463482
Report generated 08/11/2009 15:25

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082928

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309461-13
Instrument ID: PE-ICP2 Run Time: 11:31 Method: 6010B
File ID: P2.081109.113126 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	-0.00340	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463482
Report generated 08/11/2009 15:25

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082929

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309461-15
Instrument ID: PE-ICP2 Run Time: 12:52 Method: 6010B
File ID: P2.081109.125240 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	-0.00344	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463482
Report generated 08/11/2009 15:25

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00082930

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309461-06
Instrument ID: PE-ICP2 Run Time: 10:04 Method: 6010B
File ID: P2.081109.100423 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Arsenic		.4	0.405	101	90 - 110	
Barium		1	1.02	102	90 - 110	
Cadmium		.05	0.0500	100	90 - 110	
Chromium		.5	0.506	101	90 - 110	
Lead		.5	0.499	99.8	90 - 110	
Selenium		.4	0.401	100	90 - 110	
Silver		.4	0.411	103	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1463478
Report generated 08/11/2009 15:25

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00082931

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309461-10

Instrument ID: PE-ICP2 Run Time: 10:29 Method: 6010B

File ID: P2.081109.102903 Analyst: PDM QC Key: STD

Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09

Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.406	mg/L	102	90 - 110		
Barium		1.00	1.02	mg/L	102	90 - 110		
Cadmium		0.0500	0.0501	mg/L	100	90 - 110		
Chromium		0.500	0.506	mg/L	101	90 - 110		
Lead		0.500	0.498	mg/L	99.5	90 - 110		
Selenium		0.400	0.417	mg/L	104	90 - 110		
Silver		0.400	0.412	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1463481

Report generated 08/11/2009 15:25

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00082932

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309461-12

Instrument ID: PE-ICP2 Run Time: 11:24 Method: 6010B

File ID: P2.081109.112442 Analyst: PDM QC Key: STD

Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09

Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.400	mg/L	100	90 - 110		
Barium		1.00	0.996	mg/L	99.6	90 - 110		
Cadmium		0.0500	0.0490	mg/L	98.0	90 - 110		
Chromium		0.500	0.495	mg/L	99.0	90 - 110		
Lead		0.500	0.486	mg/L	97.3	90 - 110		
Selenium		0.400	0.410	mg/L	102	90 - 110		
Silver		0.400	0.401	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1463481

Report generated 08/11/2009 15:25

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082933

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309461-14
Instrument ID: PE-ICP2 Run Time: 12:46 Method: 6010B
File ID: P2.081109.124600 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.394	mg/L	98.6	90 - 110		
Barium		1.00	0.997	mg/L	99.7	90 - 110		
Cadmium		0.0500	0.0496	mg/L	99.3	90 - 110		
Chromium		0.500	0.498	mg/L	99.5	90 - 110		
Lead		0.500	0.490	mg/L	98.0	90 - 110		
Selenium		0.400	0.420	mg/L	105	90 - 110		
Silver		0.400	0.407	mg/L	102	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463481
Report generated 08/11/2009 15:25

Login number: L09080144 **Workgroup (AAB#):** WG309405
Instrument ID: PE-ICP2 **Method:** 6010B
Sol. A : WG309461-08 **File ID:** P2.081109.101742 **Units:** mg/L
Sol. AB : WG309461-09 **File ID:** P2.081109.102322 **Matrix:** Leachate

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Arsenic	NS	-0.0000100	NS	0.250	0.253	101	
Barium	NS	-0.000760	NS	0.250	0.258	103	
Cadmium	NS	-0.0000400	NS	0.500	0.450	90.0	
Chromium	NS	-0.000900	NS	0.250	0.252	101	
Lead	NS	-0.0000200	NS	0.500	0.491	98.2	
Selenium	NS	0.0000400	NS	0.250	0.255	102	
Silver	NS	-0.000130	NS	0.500	0.514	103	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

Login Number: L09080144 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	AG	AL	AS	B	BA
ALUMINUM	396.15	0	0	0.206	0	0
ANTIMONY	206.84	0	0	-0.740	0	0
ARSENIC	188.98	0	-0.00216	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	-0.370	0.0414	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	-1.07
COPPER	327.39	0	0	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	0	-0.107	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0	0	0	0
MANGANESE	257.61	-0.185	0	-0.231	-0.0949	-0.230
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.207	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0.200	0	0.0400
ZINC	206.20	0	0.0753	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463476
Report generated: 08/11/2009 15:25

Login Number: L09080144 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	BE	CA	CD	CO	CR
ALUMINUM	396.15	0	0.274	0	0	0
ANTIMONY	206.84	0	0	0	0	19.8
ARSENIC	188.98	0	-0.00673	-0.0875	0	-2.91
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	-0.0105
BORON	249.68	0	0	50.1	3.51	1.50
CADMIUM	228.80	0	0	0	-5.41	0
CALCIUM	227.55	0	0	0	126	-21.8
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0.156
COPPER	327.39	0	0	0	0.380	-0.0467
IRON	239.56	0	0.0227	0	1.91	0.331
LEAD	220.35	0	-0.0247	0	0.666	-0.0700
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.638	0	0	0
MANGANESE	257.61	-1.04	0.0280	-0.755	-0.0418	-0.110
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0.623	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.0190	0	-0.633	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	-0.0100	0	0.953	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	-0.0233	0	0	0.297
VANADIUM	290.88	0	-0.00100	0	0	0
ZINC	206.20	0	-0.0333	15.3	0	-7.08

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463476
Report generated: 08/11/2009 15:25

Login Number: L09080144 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	CU	FE	K	LI	MG
ALUMINUM	396.15	0	0.108	0	0	0
ANTIMONY	206.84	0	0	0	0	0
ARSENIC	188.98	0	0.00251	0	0	0
BARIUM	233.53	0	0.0520	0	0	0
BERYLLIUM	234.86	0	0.152	0	0	0
BORON	249.68	0	-4.02	0	0	0
CADMIUM	228.80	0	-0.00274	0	0	0
CALCIUM	227.55	-2.44	-4.01	0	0	0.104
CHROMIUM	267.72	0	-0.0239	0	0	0
COBALT	228.62	0	0.00949	0	0	0
COPPER	327.39	0	-0.0851	0	0.154	0.0143
IRON	239.56	0	0	0	0	0.0276
LEAD	220.35	0.551	0.103	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.174	0	0	0
MANGANESE	257.61	-0.0457	-0.156	-0.0181	-0.794	0.0147
MOLYBDENUM	202.03	0	-0.0494	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	-0.0451	0	0	0
SELENIUM	196.03	0	-1.01	0	0	-0.0113
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0.0717	-0.00209	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0.138	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0.0715	0	0	-0.0400
ZINC	206.20	-0.200	-0.0563	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463476
Report generated: 08/11/2009 15:25

Login Number: L09080144 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	MN	MO	NA	NI	PB
ALUMINUM	396.15	0	32.9	0	0	0
ANTIMONY	206.84	0	-17.4	0	0	0
ARSENIC	188.98	0	3.66	0	0	0
BARIUM	233.53	0	-0.548	0	0	0
BERYLLIUM	234.86	-0.131	-0.529	0	-0.00974	0
BORON	249.68	0	-2.08	0	0	0
CADMIUM	228.80	0	0.0112	0	-0.0299	0
CALCIUM	227.55	0	-18.6	0	-1090	0
CHROMIUM	267.72	0.434	-0.00100	0	0	0
COBALT	228.62	0	-0.835	0	0.129	0
COPPER	327.39	0.136	-0.0774	0	0.150	0.257
IRON	239.56	0.480	0	0	0	0.407
LEAD	220.35	0.0756	-2.50	0	-0.174	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-5.58	0	0	0.0252
MANGANESE	257.61	0	-0.0482	-0.00916	-0.0340	-0.0413
MOLYBDENUM	202.03	-0.209	0	0	0.120	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	1.00	0	0
SELENIUM	196.03	0.451	0.199	0	0.0799	0
SILICON	251.61	0	12.9	0	0	0
SILVER	328.07	0.130	0.0781	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	-0.00100	1.20	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0.578	0	0	0
ZINC	206.20	0	0.180	0	-0.200	-0.100

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463476
Report generated: 08/11/2009 15:25

Login Number: L09080144 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	SB	SE	SI	SN	SR
ALUMINUM	396.15	0	0	0	0	0
ANTIMONY	206.84	0	0	0	-10.6	0
ARSENIC	188.98	0	0	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	0	2.79	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0
COPPER	327.39	0	0.148	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	-0.0100	0	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-0.0924	0	0	0
MANGANESE	257.61	-0.0505	-0.0281	-0.185	-0.0445	-0.625
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	-0.0500	-0.0100	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0.200
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0	0	0
ZINC	206.20	-0.300	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463476
Report generated: 08/11/2009 15:25

Login Number: L09080144 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	TI	TL	V	ZN
ALUMINUM	396.15	0	0	0	0
ANTIMONY	206.84	0	0	-3.59	0
ARSENIC	188.98	0	0	0.0930	0
BARIUM	233.53	0	0	-1.83	0
BERYLLIUM	234.86	0	0	0	0
BORON	249.68	0	0	0	0
CADMIUM	228.80	0	0	0.0940	0
CALCIUM	227.55	0	0	19.1	0
CHROMIUM	267.72	0	0	-0.567	-0.0400
COBALT	228.62	2.21	0	0	0
COPPER	327.39	-1.05	0	-0.603	0
IRON	239.56	0	0	0	-0.0613
LEAD	220.35	-0.441	0	-0.150	0
LITHIUM	670.78	0	0	0	0
MAGNESIUM	279.08	0	0	-0.0280	0
MANGANESE	257.61	-0.00931	-0.0414	-0.0601	-0.0553
MOLYBDENUM	202.03	0	0	-0.288	0
NICKEL	231.60	0	0.617	0	0
POTASSIUM	766.49	0	0	0	0
SELENIUM	196.03	-0.220	0	0.823	0
SILICON	251.61	0	0	0	0
SILVER	328.07	0	0	-5.47	0
SODIUM	589.59	0	0	0	0
STRONTIUM	407.77	0	0	0	0
THALLIUM	190.80	-4.00	0	0	0
TIN	189.93	0	0	0	0
TITANIUM	334.94	0	0	0	0
VANADIUM	290.88	0	0	0	0
ZINC	206.20	0	0	-0.100	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463476
Report generated: 08/11/2009 15:25

Login Number: L09080144 **Date:** 06/30/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	450.0
Antimony	10.00	45.0
Arsenic	10.00	9.0
Barium	10.00	9.0
Beryllium	10.00	4.5
Boron	10.00	45.0
Cadmium	10.00	9.0
Calcium	10.00	450.0
Chromium	10.00	45.0
Cobalt	10.00	45.0
Copper	10.00	45.0
Iron	10.00	450.0
Lead	10.00	90.0
Lithium	10.00	0.8
Magnesium	10.00	450.0
Manganese	10.00	27.0
Molybdenum	10.00	45.0
Nickel	10.00	45.0
Potassium	10.00	90.0
Selenium	10.00	45.0
Silicon	10.00	36.0
Silver	10.00	4.5
Sodium	10.00	180.0
Strontium	10.00	4.5
Thallium	10.00	45.0
Tin	10.00	45.0
Titanium	10.00	45.0
Vanadium	10.00	45.0
Zinc	10.00	45.0

Comments:
All analytes passed acceptance criteria at the specified concentration.

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1463475
Report generated: 08/11/2009 15:25

2.2.2 Metals CVAA Data (Mercury)

2.2.2.1 Summary Data

Microbac Laboratories Inc.
METALS

Microbac Login No: L09080144

METHOD

Preparation: SW-846 7470A

Analysis: SW-846 7470A

HOLDING TIMES

Sample Preparation: All holding times were met.

Sample Analysis: All holding times were met.

PREPARATION

Sample preparation proceeded normally.

CALIBRATION

Initial Calibrations: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Serial Dilution/Post Digestion Spike: WG309448(7470A) - All acceptance criteria were met.

SAMPLES

WG309448(7470A) - The MS/MSD samples associated with this batch were not spiked during the digestion procedure. The LCS and post digestion spike yielded compliant recoveries to assess matrix and digestion efficiencies.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Analyst: PDM

Approved: 12-AUG-09
Maren Berry

LABORATORY REPORT

00082945

L09080144

08/13/09 10:04

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS01	L09080144-01	7470A	1	07-AUG-09

Report Number: **L09080144**
Report Date : **August 13, 2009**

00082946

Sample Number:	L09080144-01	PrePrep Method:	1311	Instrument:	HYDRA
Client ID:	PRDS01	Prep Method:	7470A	Prep Date:	08/11/2009 11:25
Matrix:	Leachate	Analytical Method:	7470A	Cal Date:	
Workgroup Number:	WG309448	Analyst:	PDM	Run Date:	08/11/2009 13:39
Collect Date:	08/06/2009 13:45	Dilution:	1	File ID:	HY.081109.133918
Sample Tag:	01	Units:	mg/L		

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

2.2.2.2 QC Summary Data

Example Cold Vapor Mercury Calculations
Hydra AA Mercury Analyzer

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and five standards.

2.0 Calculating the concentration (C) of an element in water using data from run log and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to Volume (mL)	40
Vi = Aliquot Volume (mL)	40
D = Manual dilution factor, if required (10X = 10)	1
Cx = Concentration of element in ppb (ug/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Ws} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to volume (mL)	40
Ws = Aliquot weight (g)	0.6
D = Manual dilution factor	1
Cx = Concentration of element in ug/kg	6.67

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

1 Cx = Concentration calculated as received (wet basis)	6.67
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (ug/kg)	8.33

8.33 ug/kg = 0.00833 mg/kg

TCLP Non-Volatile

Analyst(s): Ruc
Date: 08-10-09

Analyst/Date		Analyst/Date	
Ruc 8-10-09		Ruc 8-11-09	
Time On	Temp On °C	Time Off	Temp Off °C
1330	24	0630	23

Jug #	Sample #	Tests	Method	Fluid #	Matrix*	%Solid	Size Reduction Yes	Size Reduction No	Int. Wt. (g)	Fluid Vol. (mL)
D	08-144-01	ME	1311	FF758	S/S	100		✓	100.07	2000
D	08-149-03				S		✓		100.08	
D	05						✓		100.01	
D	08-154-01						✓		100.04	
D	08-171-01							✓	100.02	
D	02							✓	100.00	
D	08-178-01				S/S			✓	100.06	
D	02				1			✓	100.05	
N/A	FBLK				N/A	N/A		✓	2000	
2	08-149-04			Filtered	W	<5		✓	100	100

Ruc 8-10-09

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: Filtered SY processed @1300 - Ruc

Peer Review By: _____ Supervisor Review: _____

Microbac Laboratories Inc.
Metals Digest Log

00082950

Workgroup: WG309423
Analyst: BRG
Spike Analyst: BRG
Method: 7470A
Run Date: 08/11/2009 11:25
Hotblock Start Temp: 95.4 @ 08:35
Hotblock End Temp: 98 @ 10:35

SOP: ME404 Revison 12
Spike Solution: STD34575
Spike Witness: VC
HNO3 Lot #: COA13945
KMnO4 1:1 Lot #: RGT13913
H2SO4 Lot #: COA13254
K2S2O8 1:1 Lot #: RGT14066
Digest tubes Lot #: COA14013
Mercury Water ICV Lot #: STD34577
HG H2O STDS 10PPM Lot #: STD34583

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Spike Amount	Due Date
1	WG309423-02	BLANK	1	40 mL	40 mL		
2	WG309362-01	FBLK	17	4 mL	40 mL		
3	WG309423-03	LCS	1	40 mL	40 mL	4 mL	
4	L09080144-01	SAMP	17	4 mL	40 mL		08/11/09
5	L09080149-03	SAMP	17	4 mL	40 mL		08/17/09
6	L09080149-04	SAMP	17	4 mL	40 mL		08/17/09
7	L09080149-05	SAMP	17	4 mL	40 mL		08/17/09
8	L09080150-01	SAMP	1	40 mL	40 mL		08/18/09
9	WG309423-01	REF	1	40 mL	40 mL		
10	L09080150-02	RS01	1	40 mL	40 mL		08/18/09
11	WG309423-04	MS	1	40 mL	40 mL	4 mL	
12	L09080150-03	MS01	1	40 mL	40 mL	4 mL	08/18/09
13	WG309423-05	MSD	1	40 mL	40 mL	4 mL	
14	L09080150-04	SD01	1	40 mL	40 mL	4 mL	08/18/09
15	L09080150-05	SAMP	1	40 mL	40 mL		08/18/09
16	L09080150-06	SAMP	1	40 mL	40 mL		08/18/09
17	L09080150-08	SAMP	1	40 mL	40 mL		08/18/09
18	L09080150-09	SAMP	1	40 mL	40 mL		08/18/09
19	L09080150-10	SAMP	1	40 mL	40 mL		08/18/09
20	L09080150-11	SAMP	1	40 mL	40 mL		08/18/09
21	L09080150-12	SAMP	1	40 mL	40 mL		08/18/09
22	L09080154-01	SAMP	17	4 mL	40 mL		08/17/09
23	L09080171-01	SAMP	17	4 mL	40 mL		08/14/09
24	L09080171-02	SAMP	17	4 mL	40 mL		08/14/09
25	L09080178-01	SAMP	17	4 mL	40 mL		08/11/09
26	L09080178-02	SAMP	17	4 mL	40 mL		08/11/09
27	L09080180-01	SAMP	1	40 mL	40 mL		08/21/09

Analyst: Brenda Gregory

Reviewer: Erin Potter

BLOCK_DIG - Modified 07/22/2008
PDF ID: 1463078
Report generated: 08/11/2009 11:26

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HYDRA Dataset: 081109A.PRN
Analyst1: PDM Analyst2: N/A
Method: 7470A SOP: ME404 Rev: 11
Maintenance Log ID: 29752

Calibration Std: STD34583 ICV/CCV Std: STD34577 Post Spike: STD34583
ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 309448

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.081109.130956	WG309466-01	Calibration Point		1		08/11/09 13:09
2	HY.081109.131322	WG309466-02	Calibration Point		1		08/11/09 13:13
3	HY.081109.131527	WG309466-03	Calibration Point		1		08/11/09 13:15
4	HY.081109.131723	WG309466-04	Calibration Point		1		08/11/09 13:17
5	HY.081109.131911	WG309466-05	Calibration Point		1		08/11/09 13:19
6	HY.081109.132110	WG309466-06	Calibration Point		1		08/11/09 13:21
7	HY.081109.132255	WG309466-07	Initial Calibration Verification		1		08/11/09 13:22
8	HY.081109.132439	WG309466-08	Initial Calibration Verification		1		08/11/09 13:24
9	HY.081109.132622	WG309466-09	Initial Calib Blank		1		08/11/09 13:26
10	HY.081109.132807	WG309466-10	CCV		1		08/11/09 13:28
11	HY.081109.133012	WG309466-11	CCB		1		08/11/09 13:30
12	HY.081109.133153	WG309423-02	Method/Prep Blank	40/40	1		08/11/09 13:31
13	HY.081109.133511	WG309423-03	Laboratory Control S	40/40	1		08/11/09 13:35
14	HY.081109.133713	WG309362-01	Fluid Blank		1		08/11/09 13:37
15	HY.081109.133918	L09080144-01	PRDS01	4/40	1		08/11/09 13:39
16	HY.081109.134151	WG309448-01	Post Digestion Spike		1	L09080144-01	08/11/09 13:41
17	HY.081109.134715	WG309448-01	Post Digestion Spike		1	L09080144-01	08/11/09 13:47
18	HY.081109.134910	L09080178-01	PRDS02	4/40	1		08/11/09 13:49
19	HY.081109.135053	L09080178-02	PRDS03	4/40	1		08/11/09 13:50
20	HY.081109.135236	L09080149-03	GT090086	4/40	1		08/11/09 13:52
21	HY.081109.135504	L09080149-04	GT090087	4/40	1		08/11/09 13:55
22	HY.081109.135652	WG309466-12	CCV		1		08/11/09 13:56
23	HY.081109.135858	WG309466-13	CCB		1		08/11/09 13:58
24	HY.081109.140112	L09080419-05	0908041905		1		08/11/09 14:01
25	HY.081109.140310	L09080150-01	MW95-1-0908		1		08/11/09 14:03
26	HY.081109.140455	WG309448-02	Post Digestion Spike		1	L09080150-01	08/11/09 14:04
27	HY.081109.140636	L09080450-02	0908045002		1		08/11/09 14:06
28	HY.081109.141414	L09080450-03	0908045003		1		08/11/09 14:14
29	HY.081109.141731	WG309466-14	CCV		1		08/11/09 14:17
30	HY.081109.141946	WG309466-15	CCB		1		08/11/09 14:19
31	HY.081109.142144	L09080149-05	GT090088	4/40	1		08/11/09 14:21
32	HY.081109.142438	L09080150-01	MW95-1-0908	40/40	1		08/11/09 14:24
33	HY.081109.142635	L09080150-02	MW95-2-0908		1	WG309423-01	08/11/09 14:26
34	HY.081109.142912	L09080150-03	MW95-2-0908-MS		1	WG309423-04	08/11/09 14:29
35	HY.081109.143104	L09080150-04	MW95-2-0908-MSD		1	WG309423-05	08/11/09 14:31
36	HY.081109.143306	L09080150-05	CLAMW12-0908	40/40	1		08/11/09 14:33
37	HY.081109.143448	WG309448-02	Post Digestion Spike		1	L09080150-01	08/11/09 14:34

Page: 1 Approved: August 11, 2009

Maren Berry

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HYDRA Dataset: 081109A.PRN
Analyst1: PDM Analyst2: N/A
Method: 7470A SOP: ME404 Rev: 11
Maintenance Log ID: 29752

Calibration Std: STD34583 ICV/CCV Std: STD34577 Post Spike: STD34583
ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 309448

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	HY.081109.143736	L09080150-06	DUP-01-0908	40/40	1		08/11/09 14:37
39	HY.081109.143920	L09080150-08	LF1MW04A-0908	40/40	1		08/11/09 14:39
40	HY.081109.144105	L09080150-09	MW92-2-0908	40/40	1		08/11/09 14:41
41	HY.081109.144312	WG309466-16	CCV		1		08/11/09 14:43
42	HY.081109.144527	WG309466-17	CCB		1		08/11/09 14:45
43	HY.081109.144714	L09080150-10	LF7MW04-0908	40/40	1		08/11/09 14:47
44	HY.081109.144920	L09080150-11	LF1MW01B-0908	40/40	1		08/11/09 14:49
45	HY.081109.145126	L09080150-12	GPMW08-0908	40/40	1		08/11/09 14:51
46	HY.081109.145318	L09080154-01	GM090046	4/40	1		08/11/09 14:53
47	HY.081109.145502	L09080171-01	TANK \#2 - 1		1		08/11/09 14:55
48	HY.081109.145645	L09080171-02	TANK \#2 - 2		1		08/11/09 14:56
49	HY.081109.145828	L09080180-01	LFD02-0908	40/40	1		08/11/09 14:58
50	HY.081109.150010	WG309466-18	CCV		1		08/11/09 15:00
51	HY.081109.150154	WG309466-19	CCB		1		08/11/09 15:01

  Approved: August 11, 2009

Maren Berry

Microbac®

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HYDRA Dataset: 081209B.PRN
Analyst1: PDM Analyst2: N/A
Method: 7470A SOP: ME404 Rev: 11
Maintenance Log ID: 29766

Calibration Std: STD34583 ICV/CCV Std: STD34577 Post Spike: STD34583
ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 309448

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.081209.141532	WG309574-01	Calibration Point		1		08/12/09 14:15
2	HY.081209.141755	WG309574-02	Calibration Point		1		08/12/09 14:17
3	HY.081209.142007	WG309575-01	Calibration Point		1		08/12/09 14:20
4	HY.081209.142304	WG309575-02	Calibration Point		1		08/12/09 14:23
5	HY.081209.142459	WG309575-03	Calibration Point		1		08/12/09 14:24
6	HY.081209.142655	WG309575-04	Calibration Point		1		08/12/09 14:26
7	HY.081209.142910	WG309575-05	Calibration Point		1		08/12/09 14:29
8	HY.081209.143056	WG309575-06	Calibration Point		1		08/12/09 14:30
9	HY.081209.143253	WG309575-07	Initial Calibration Verification		1		08/12/09 14:32
10	HY.081209.143524	WG309575-08	Initial Calib Blank		1		08/12/09 14:35
11	HY.081209.143718	WG309575-09	CCV		1		08/12/09 14:37
12	HY.081209.143920	WG309575-10	CCB		1		08/12/09 14:39
13	HY.081209.144151	WG309423-02	Method/Prep Blank	40/40	1		08/12/09 14:41
14	HY.081209.144342	WG309423-03	Laboratory Control S	40/40	1		08/12/09 14:43
15	HY.081209.144525	WG309362-01	Fluid Blank		1		08/12/09 14:45
16	HY.081209.144718	L09080171-01	TANK \#2 - 1	4/40	1		08/12/09 14:47
17	HY.081209.144904	WG309448-03	Post Digestion Spike		1	L09080171-01	08/12/09 14:49
18	HY.081209.145056	L09080171-02	TANK \#2 - 2	4/40	1		08/12/09 14:50
19	HY.081209.145307	WG309575-11	CCV		1		08/12/09 14:53
20	HY.081209.145449	WG309575-12	CCB		1		08/12/09 14:54

Comments

Seq.	Rerun	Dil.	Reason	Analytes
1			Not used in calibration	
2			Not used in calibration	

Approved:

Microbac®

Microbac Laboratories Inc.

00082954

Data Checklist

Date: 11-AUG-2009
Analyst: PDM
Analyst: NA
Method: 7470A
Instrument: HYDRA
Curve Workgroup: 309466
Runlog ID: 29571
Analytical Workgroups: 309448

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	144, 178
Level 4	150, 180
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KHR
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
11-AUG-2009

Secondary Reviewer:
11-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-11-2009 19:04:45

Microbac Laboratories Inc.

Data Checklist

Date: 12-AUG-2009
Analyst: PDM
Analyst: NA
Method: 7470A
Instrument: HYDRA
Curve Workgroup: 309575
Runlog ID: 29591
Analytical Workgroups: 309448

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	
CRI	
Blank/LCS	X
MS/MSD	
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	0171
Client Forms	X
Level X	
Level 3	
Level 4	0171
Check for compliance with method and project specific requirements	
Check the completeness of reported information	
Check the information for the report narrative	
Primary Reviewer	PDM
Secondary Reviewer	
Comments	

Primary Reviewer: Secondary Reviewer:
12-AUG-2009

Pierce Morris

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-12-2009 15:52:00

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00082956

Analytical Method: 7470A AAB#: WG309448

Login Number: L09080144

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRDS01	01	08/06/09	08/10/09	4			08/11/09	4.9	28		08/11/09	1	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1463545
Report generated 08/11/2009 15:37

METHOD BLANK SUMMARY

Login Number:	L09080144	Work Group:	WG309448
Blank File ID:	HY.081109.133153	Blank Sample ID:	WG309423-02
Prep Date:	08/11/09 11:25	Instrument ID:	HYDRA
Analyzed Date:	08/11/09 13:31	Method:	7470A
Analyst:	PDM		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309423-03	HY.081109.133511	08/11/09 13:35	01
PRDS01	L09080144-01	HY.081109.133918	08/11/09 13:39	01

Report Name: BLANK_SUMMARY
PDF File ID: 1463546
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.

METHOD BLANK REPORT

00082958

Login Number: L09080144 Prep Date: 08/11/09 11:25 Sample ID: WG309423-02

Instrument ID: HYDRA Run Date: 08/11/09 13:31 Prep Method: 7470A

File ID: HY.081109.133153 Analyst: PDM Method: 7470A

Workgroup (AAB#): WG309448 Matrix: Leachate Units: mg/L

Contract #: DACA56-94-D-0020 Cal ID: HYDRA-11-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury	0.000100	0.000200	-0.000114	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name:BLANK

PDF ID: 1463547

11-AUG-2009 15:37

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00082959

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309423-03
Instrument ID: HYDRA Run Time: 13:35 Prep Method: 7470A
File ID: HY.081109.133511 Analyst: PDM Method: 7470A
Workgroup (AAB#): WG309448 Matrix: Leachate Units: mg/L
QC Key: STD Lot#: STD34575 Cal ID: HYDRA-11-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury	0.00400	0.00417	104	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 1463548
Report generated: 08/11/2009 15:37

Sample Login ID: L09080144 **Worknum:** WG309448
Instrument ID: HYDRA **Method:** 7470A
Post Spike ID: WG309448-01 **File ID:** HY.081109.134715 **Dil:** 1 **Units:** ug/L
Sample ID: L09080144-01 **File ID:** HY.081109.133918 **Dil:** 1 **Matrix:** Leachate

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	0.869		0	U	1	86.9	85 - 115	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1463544
Report generated: 08/11/2009 15:37

Microbac Laboratories Inc.
INITIAL CALIBRATION SUMMARY

00082961

Login Number: L09080144
Analytical Method: 7470A
ICAL Worknum: WG309466

Workgroup (AAB#): WG309448
Instrument ID: HYDRA
Initial Calibration Date: 08/11/2009 13:21

Analyte	WG309466-01		WG309466-02		WG309466-03		WG309466-04		WG309466-05		WG309466-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	-23	0.200	1010	1.00	4047	2.00	7242	5.00	17082	10.0	34505

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1463550
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00082962

Login Number: L09080144
Analytical Method: 7470A
ICAL Worknum: WG309466

Workgroup (AAB#): WG309448
Instrument ID: HYDRA
Initial Calibration Date: 08/11/2009 13:21

Analyte	R	Q
Mercury	1.000	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1463550
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

00082963

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309466-09
Instrument ID: HYDRA Run Time: 13:26 Method: 7470A
File ID: HY.081109.132622 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
MERCURY	.1	.2	.1	U

ICB - Modified 07/14/2009
PDF File ID: 1463552
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082964

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309466-11
Instrument ID: HYDRA Run Time: 13:30 Method: 7470A
File ID: HY.081109.133012 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	-0.179	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463554
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082965

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309466-13
Instrument ID: HYDRA Run Time: 13:58 Method: 7470A
File ID: HY.081109.135858 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	-0.104	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463554
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082966

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309466-15
Instrument ID: HYDRA Run Time: 14:19 Method: 7470A
File ID: HY.081109.141946 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463554
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00082967

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309466-17
Instrument ID: HYDRA Run Time: 14:45 Method: 7470A
File ID: HY.081109.144527 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	-0.109	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463554
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00082968

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309466-08
Instrument ID: HYDRA Run Time: 13:24 Method: 7470A
File ID: HY.081109.132439 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Mercury		2	1.91	95.5	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1463551
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082969

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309466-10
Instrument ID: HYDRA Run Time: 13:28 Method: 7470A
File ID: HY.081109.132807 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00195	mg/L	97.5	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463553
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082970

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309466-12
Instrument ID: HYDRA Run Time: 13:56 Method: 7470A
File ID: HY.081109.135652 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00194	mg/L	97.0	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463553
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082971

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309466-14
Instrument ID: HYDRA Run Time: 14:17 Method: 7470A
File ID: HY.081109.141731 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00192	mg/L	96.0	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463553
Report generated 08/11/2009 15:37

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00082972

Login Number: L09080144 Run Date: 08/11/2009 Sample ID: WG309466-16
Instrument ID: HYDRA Run Time: 14:43 Method: 7470A
File ID: HY.081109.144312 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00184	mg/L	92.0	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463553
Report generated 08/11/2009 15:37

2.3 General Chemistry Data

2.3.1 Percent Solids Data

2.3.1.1 Raw Data

LABORATORY REPORT

00082976

L09080144

08/13/09 10:03

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS01	L09080144-01	D2216-90	1	07-AUG-09

Report Number: **L09080144**
Report Date : **August 13, 2009**

00082977

Sample Number: **L09080144-01**
Client ID: **PRDS01**
Matrix: **Soil**
Workgroup Number: **WG309281**
Collect Date: **08/06/2009 13:45**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **JDH**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/10/2009 08:39**
Cal Date:
Run Date: **08/10/2009 08:39**
File ID: **B1.309281-0109**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**84.2**		**1.00**	**1.00**

Example Percent Solids Calculations

1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:	
WT1 = Weight, in grams, of the empty container	1.30 g
WT2 = Weight, in grams, of the container and wet sample	21.274 g
WT3 = Weight, in grams, of the container and dried sample	5.21 g
F = Factor to get units as percent weight	100
%Solids = Percent solids present in sample.	19.58%

2.0 Calculating the percent moisture of a sample.

% Moisture = 100 - % Solids from 1.0 calculation

PERCENT SOLIDS

Workgroup (AAB#): WG309281 Analyst: JDH ADT(on): 08/07/2009 16:07
Method: D2216-90 Instrument: BAL001 ADT(off): 08/10/2009 08:39
SOP: K0003 Rev: 9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09080143-01	1.29	38.19	31.79			82.66	
L09080143-02	1.28	39.2	33.19			84.15	
L09080143-03	1.29	32.22	27.58			85.00	
L09080143-04	1.28	45.86	40.74			88.52	
L09080143-05	1.28	34.45	28.46			81.94	
L09080143-06	1.3	24.49	20.48			82.71	
L09080143-07	1.29	29.68	25.79			86.30	
L09080143-08	1.3	29.53	24.1			80.77	
L09080144-01	1.29	31.76	26.96			84.25	
L09080167-10	1.3	24.76	20.62			82.35	
WG309281-01	1.3	24.76	20.62			82.35	17.65
WG309281-02	1.33	24.21	20.59			84.18	15.82

Analyst: Justin Hansen

PERCENT_SOLIDS - Modified 04/24/2008
PDF ID: 1461459
Report generated: 08/10/2009 08:41

2.3.2 Reactivity Data

2.3.2.1 Summary Data

LABORATORY REPORT

00082982

L09080144

08/13/09 10:04

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS01	L09080144-01	SW7.34	1	07-AUG-09

Report Number: **L09080144**
Report Date : **August 13, 2009**

00082983

Sample Number: **L09080144-01**
Client ID: **PRDS01**
Matrix: **Soil**
Workgroup Number: **WG309303**
Collect Date: **08/06/2009 13:45**

PrePrep Method: **NONE**
Prep Method: **SW7.34**
Analytical Method: **SW7.34**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **BURET**
Prep Date: **08/10/2009 07:31**
Cal Date:
Run Date: **08/10/2009 07:31**
File ID: **ET.0908100731-09**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

2.3.2.2 QC Summary Data

Example Calculations - Reactive Sulfide

$$A = \frac{((B * C) - (D * E) * 16000}{F * G} = sulfide\,(mg / L)$$

$$\frac{A * I}{J} = reactive\ sulfide\ (mg / Kg)$$

Example Calculation:

B (mL of Iodine):	15
C (N of Iodine):	0.02514
D (mL of titrant):	9.4
E (N of titrant):	0.02489
16000 factor (1mL of 0.025N iodine reacts with 0.4mg sulfide):	16000
F (mL of scrubber solution used for titrating for sulfide):	100
G (dilution of sample (include 50/250 scrubber dilution)):	0.20
I (volume of NaOH placed in scrubber):	50
J (grams of sample used):	10
A=	114.5072
mg/Kg reactive sulfide=	572.536

Microbac Laboratories Inc.

Data Checklist

Date: 10-AUG-2009
Analyst: DLP
Analyst: NA
Method: REACTS
Instrument: BURET
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG309303

Calibration/Linearity	08-07-09
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	DLP
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
11-AUG-2009

Secondary Reviewer:
11-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-11-2009 16:00:39

2.3.2.3 Raw Data

WORKGROUP: WG309303

REACTIVE SULFIDE

☐ EPA ch. 7 SOP K7332 Revision #: 8
☐ Other
LCS: 5+239548 Daily Dilution: 5(821)/200 = Instrument: buret
non-reacted LCS Daily Dilution = 20.525

Iodine standardization (0.025 N and 0.1N)
mL 10 N titrant 0.0257 8-07-09 mL 8 N titrant: 0.0257 8-07-09
Volume I: 10 mL Volume I: 2 mL
Normality I: 0.0257 Normality I: 0.103
Stock standardization (in duplicate)
mL I 1) 10 2) 10
N I 1) 0.103 2) 0.103 821 = stock conc (mg/L)
mL 0.025 titrant 1) 20.1 2) 20.1

7-21-09

SAMPLE	Grams Reacted	Volume Titrated	mL Iodine	N Iodine	mL 0.0257 N Sodium Thiosulfate
BLANK	X	200	15	0.0257	15.0
Non-reacted LCS (mg/L)	X	200	15		5.4
Reacted (mg/L)	10.0	100	15		10.8
08-107-01	10.013	100	5		5.0
02	10.062				5.0
03	10.038				5.0
-04	10.013				5.0
-05	10.051				5.0
08-149-01	10.0150				5.0
08-178-01	10.059	100	5	0.0257	4.9
02	10.049	100	5		4.9
DUP: 08-107-02	10.044	100	5	0.0257	5.0

Analyst: Courtney Thyne Date / Time: 08-10-09/731

DCN#80377

Microbac Laboratories Inc.
TITRAMETRIC REPORT

Workgroup (AAB#):WG309303 Analyst:DLP
Product:SW7.34 Run Date:08/10/2009 07:31
Analyte:Reactivity, Sulfide

SAMPLE NUMBER	Sample	Volume	Vol I	Nor I	Vol T	Nor T	Dil	NaOH	Scrub.	Anal.	Reported	Units
WG309303-01	250	200.0	15	.0257	15	.0257	1	50	250	0	0	mg/kg
WG309303-02	250	200.0	15	.0257	5.4	.0257	1	50	250	19.74	19.74	mg/kg
WG309303-03	10	100.0	15	.0257	10.8	.0257	1	50	250	431.8	431.8	mg/kg
L09080107-01	10.013	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080107-02	10.062	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
WG309303-04	10.062	100.0	5	.0257	5	.0257	1	50	250	0	0	mg/kg
L09080107-03	10.038	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080107-04	10.013	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080107-05	10.051	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080144-01	10.15	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080178-01	10.059	100.0	5	.0257	4.9	.0257	1	50	250	ND	ND	mg/kg
L09080178-02	10.049	100.0	5	.0257	4.9	.0257	1	50	250	ND	ND	mg/kg
WG309303-05	10.044	100.0	5	.0257	5	.0257	1	50	250	0	0	mg/kg

REACTS_REPORT - Modified 03/06/2008

Report generated 08/11/2009 09:34

Microbac

2.3.3 PH Data

2.3.3.1 Summary Data

LABORATORY REPORT

00082992

L09080144

08/13/09 10:04

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS01	L09080144-01	9045D	1	07-AUG-09

Report Number: **L09080144**
Report Date : **August 13, 2009**

00082993

Sample Number: **L09080144-01**
Client ID: **PRDS01**
Matrix: **Soil**
Workgroup Number: **WG309283**
Collect Date: **08/06/2009 13:45**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **DLP**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/07/2009 16:05**
Cal Date:
Run Date: **08/07/2009 16:05**
File ID: **OS09081013275101**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	**10-29-7**	**5.70**			

2.3.3.2 QC Summary Data

Microbac Laboratories Inc.

Data Checklist

Date: 07-AUG-2009
Analyst: DLP
Analyst: NA
Method: PH
Instrument: ORION 4-STAR
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG309283

Calibration/Linearity	08-07-09
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	
LCS/LCS Dup	
MS/MSD	
Duplicate	X
Upload Results	
Client Forms	X
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	DLP
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
07-AUG-2009

Secondary Reviewer:
10-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-10-2009 08:13:46

2.3.3.3 Raw Data

WORKGROUP: WG309283

pH

Sample	Calibration Buffers	Water Misc. Liquid	50% Slurry Of Solid	50% Water Org. Liq. Mix
LCS 6 STD33501	7, 4, 10	5.99		
08-144-01			5.70	
08-149-04		10.04		
DUP 08-144-01			5.71	
LCS 9 STD33444		9.00		

SW846 9040C/9045D

SM 4500-H(+)-B

EPA 150.1

SOP K1501 Rev II

Circle Instrument

(Orion 4-Star)

Orion 710A #1

Orion 710A #2

Sargent - Welch

Analyst: Dorothy Lyons Date: 08-07 09/1605

DCN#80373

2.3.4 Method Flashpoint

2.3.4.1 Summary Data

LABORATORY REPORT

00083000

L09080144

08/13/09 10:04

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS01	L09080144-01	1010	1	07-AUG-09

Report Number: **L09080144**
Report Date : **August 13, 2009**

00083001

Sample Number: **L09080144-01**
Client ID: **PRDS01**
Matrix: **Soil**
Workgroup Number: **WG309412**
Collect Date: **08/06/2009 13:45**

PrePrep Method: **NONE**
Prep Method: **1010**
Analytical Method: **1010**
Analyst: **JBK**
Dilution: **1**
Units: **Degrees C**

Instrument: **PRECISION**
Prep Date: **08/11/2009 09:30**
Cal Date:
Run Date: **08/11/2009 09:30**
File ID: **PR09081115333001**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		**72.0**	**>**		

> Result is greater than the associated numerical value.

2.3.4.2 QC Summary Data

1.0 Calculating the flashpoint of a sample.

$$Flashpoint = C + 0.033(760 - P)$$

Where:
C = Observed flashpoint (Celcius)
P = Ambient barometric pressure(mmHg) corrected for temperature and gravity.

Flashpoint = Flashpoint of the sample.

Microbac Laboratories Inc.

Data Checklist

Date: 11-AUG-2009
Analyst: JBK
Analyst: NA
Method: FLASH
Instrument: PRECISION
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG309412

Calibration/Linearity	01/2009
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JBK
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
11-AUG-2009

Secondary Reviewer:
11-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-11-2009 16:00:35

2.3.4.3 Raw Data

WORKGROUP: WG309412

FLASHPOINT

LCS: STD 32143
TEMPERATURE: 21C
PRESSURE: 744.7

SOP K1010 Revision #: 12
Method SW846 1010
Instrument: Pensky Marten Closed Cup Tester

SAMPLE	DESCRIPTION	INITIAL TEMP(C)	COMMENTS or FLASHPOINT	FINAL RESULT (C)
LCS	p-Xylene	14	flash @ 27	27
LCS DUP	"	15	flash @ 28	28
Blank	DI H_2O	18	no flash @ 68	>68
08-188-01	water sol. liq. / no odor	7	flame ext @ 71	>71
08-144-01	Soil / unable to stir	18	flame ext @ 72	>72
08-178-01	Soil / unable to stir	18	flame ext @ 72	>72
-02	↓	20	flame ext @ 70	>70
08-149-04	soapy water	16	flame ext @ 69	>69
DUP: 188-01	(ditto)	14	flame ext @ 70	>70

ANALYST: [signature]
DATE: 08/11/09 @ 0930

DCN#80389

Microbac Laboratories Inc.
FLASH CALCULATIONS

Workgroup:	WG309412
Date:	11-AUG-09
Analyst:	JBK

Observed Barometric Pressure:	744.7
Lowest Pressure in Bracket:	740
Temperature Correction #1:	2.6
Temperature Correction #2:	2.53
Lowest Pressure in Bracket:	700
Grav Correction #1:	.48
Grav Correction #2:	.42
Temperature Correction:	2.54645
Grav Correction:	.44682
Corrected Barometric Pressure:	758.14673
Correction for Flash:	.06115791

2.3.5 Reactive Cyanide Data

2.3.5.1 Summary Data

LABORATORY REPORT

00083010

L09080144

08/13/09 10:04

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS01	L09080144-01	SW7.33	1	07-AUG-09

Report Number: **L09080144**
Report Date : **August 13, 2009**

00083011

Sample Number:	L09080144-01	PrePrep Method:	NONE	Instrument:	UV-120-1V
Client ID:	PRDS01	Prep Method:	SW7.33	Prep Date:	08/10/2009 07:30
Matrix:	Soil	Analytical Method:	SW7.33	Cal Date:	
Workgroup Number:	WG309302	Analyst:	DLP	Run Date:	08/10/2009 07:30
Collect Date:	08/06/2009 13:45	Dilution:	1	File ID:	1V.0908100730-08
		Units:	mg/kg		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	9.99	4.99

U Not detected at or above adjusted sample detection limit

2.3.5.2 QC Summary Data

Microbac Laboratories Inc.

Data Checklist

Date: 10-AUG-2009
Analyst: DLP
Analyst: NA
Method: REACTCN
Instrument: UV-120-1V
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG309302

Calibration/Linearity	07-16-09
Second Source Check	
ICV/CCV (std)	X
ICB/CCB	
Blank	
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	DLP
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
11-AUG-2009

Secondary Reviewer:
11-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-11-2009 16:00:40

2.3.5.3 Raw Data

00083015

WG307248

Curves

Parameter: REACT-CN

Spectrophotometer: UV-120-1V

Calibration (Curve) standard stock: Std 33348

Concentration: 968 mg/L

Recipe for preparation of curve standards found in:
SOP: K7332 Revision: 8 Page: 8

Second Source Stock: Std 33349 (concentration: 1020 mg/L

Daily Preparation: 5(1020)/250 = 20.4
(10)(20.4)/100 = 2.04
concentration = 5(2.04)/50 = 0.204

Calibration Standards (mg/L)	Volume	Cell Size	Wavelength	Absorbance
0.00	50	1	578	0.000
0.01936	↓	↓	↓	0.027
0.03872				0.053
0.0968				0.138
0.1936				0.284
0.2904				0.414
0.3872				0.557
2ND 0.204				0.298

Analyst: [signature] Date/Time: 7/16/09 @1040

DCN#80111

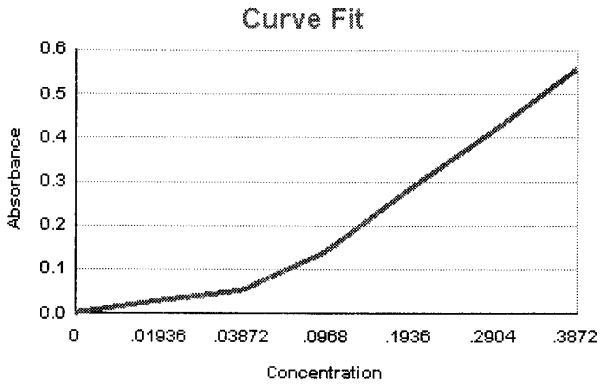
Microbac Laboratories Inc.
INITIAL CALIBRATION

Workgroup:WG307248
Analytical Method:846
Instrument ID:UV-120-1V

Analyst:JBK
Initial Calibration Date:07/16/2009

Analyte: CYANIDE
Number of Points: 7
Slope: 1.43990
Y-Intercept: -0.000635703
Coef. Of Correlation (R^2): 0.999810
Coef. Of Correlation (R): 0.999905

Concentration X	Absorbance Y	X^2	X * Y	Y-Fitted (mX^2+B)
0.00	0.00	0.00	0.00	-0.000635703
0.0194	0.0270	0.000375	0.000523	0.0272407
0.0387	0.0530	0.00150	0.00205	0.0551171
0.0968	0.138	0.00937	0.0134	0.138746
0.194	0.284	0.0375	0.0550	0.278128
0.290	0.414	0.0843	0.120	0.417511
0.387	0.557	0.150	0.216	0.556893



WG_ICAL_CAL_WET - Modified 03/06/2008
Report generated 07/16/2009 11:18

Microbac

Microbac Laboratories Inc.
ALTERNATE SOURCE REPORT

Workgroup #: WG307248
File ID: 1V.0907161040-08
CCV ID: WG307248-08
Units: mg/kg
Analyte: CYANIDE

Instrument ID: UV-120-1V
Run Date: 07/16/2009
Run Time: 10:40
Analyst: JBK
Cal ID: UV-120 -

Analyte	Expected	Found	RF	%D	Q
Reactivity, Cyanide	.204	0.207	1.46	1.5	

* Exceeds %D Limit

CCC Calibrtion Check Compounds
SPCC System Performance Check Compounds

WET_WG_SSCV - Modified 03/06/2008
Report generated 07/16/2009 11:19

Reactive Cyanide

LCS: Std 34091 (1020)
CCV: Std 34090 (968)

SOP: K7332 Revision # 8

Daily Dilution: 5(968)/250 = 19.36 OWS 8-10-09
10(19.36) = 1.936
100 - 5(1.936)/50 = 0.1936

Curve ID: 307248 7-16-09

Spec: UV 120-IV

Sample	Grams Reacted	Dilution	Cell Size	Aborbance @ 578nm
CCV: 0.1936	NA		1cm	0.304
LCS:	OWS 8-10-09 50/10.00	45		0.370
08-107-01	10.013			0.001
02	10.062			0.000
03	10.038			0.000
04	10.013			0.000
05	10.051			0.000
08-144-01	10.0150			0.000
08-178-01	10.059		1cm	0.000
02	10.049		1	0.001
DUP: 08-107-02	10.044		1cm	0.000

Analyst: Dorothy Payne Date/Time: 08-10-09/0730

DCN#80376

Microbac Laboratories Inc.
SAMPLE REPORT

Workgroup: WG309302 **Analyst:** DLP
Analyte: CYANIDE **Date:** 08/10/2009

Sample ID	I Vol	F Vol	Response	Scrubber		Slope	Y Intercept	Dil	Anal. Conc.	Rep. Conc.	Units
WG309302-01	10	10	0.370	50	250	1.440	-0.0006357	5	1.2870	6.4351	mg/kg
L09080107-01	10.013	10	0.00100	50	250	1.440	-0.0006357	1	0.028363	ND	mg/kg
WG309302-02	10.062	10	0	50	250	1.440	-0.0006357	1	0.010969	0.010902	mg/kg
L09080107-02	10.062	10	0	50	250	1.440	-0.0006357	1	0.010969	ND	mg/kg
L09080107-03	10.038	10	0	50	250	1.440	-0.0006357	1	0.010996	ND	mg/kg
L09080107-04	10.013	10	0	50	250	1.440	-0.0006357	1	0.011023	ND	mg/kg
L09080107-05	10.051	10	0	50	250	1.440	-0.0006357	1	0.010981	ND	mg/kg
L09080144-01	10.015	10	0	50	250	1.440	-0.0006357	1	0.011021	ND	mg/kg
WG309302-03	10.044	10	0	50	250	1.440	-0.0006357	1	0.010989	0.010941	mg/kg
L09080178-01	10.059	10	0	50	250	1.440	-0.0006357	1	0.010973	ND	mg/kg
L09080178-02	10.049	10	0.00100	50	250	1.440	-0.0006357	1	0.028261	ND	mg/kg

UV_REACTC - Modified 03/06/2008
Report generated 08/11/2009 09:36

Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

00083020

Workgroup #: WG309346
File ID: 1V.0908100730-01
CCV ID: WG309346-01
Units: mg/kg
Analyte: CYANIDE

Instrument ID: UV-120-1V
Run Date: 08/10/2009
Run Time: 07:30
Analyst: DLP
Cal ID: UV-120 -

Analyte	Expected	Found	RF	%D	Q
Reactivity, Cyanide	.194	0.212	1.57	9.3	

* Exceeds %D Limit

CCC Calibrtion Check Compounds
SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 08/10/2009 11:14

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
August 13, 2009

ADC – ANTHONY D. CANTER	AJF – AMANDA J. FICKIESEN	AJM – ANTHONY J. MOSSBURG
ALB – ANNIE L. BROWN	AML – ANTHONY M. LONG	BLG – BRENDA L. GREENWALT
BRG – BRENDA R. GREGORY	CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS
CAH – CHARLES A. HALL	CEB – CHAD E. BARNES	CLC – CHRYS L. CRAWFORD
CLW – CHARISSA L. WINTERS	CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
DDE – DEBRA D. ELLIOTT	DEL – DON E. LIGHTFRITZ	DEV – DAVID E. VANDENBERG
DGB – DOUGLAS G. BUTCHER	DIH – DEANNA I. HESSON	DLB – DAVID L. BUMGARNER
DLP – DOROTHY L. PAYNE	DLR – DIANNA L. RAUCH	DR – DEANNA ROBERTS
ECL – ERIC C. LAWSON	EDA – ERIN D. AGEE	ERP – ERIN R. PORTER
FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR	HJR – HOLLY J. REED
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON	JKT – JANE K. THOMPSON
JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES	JYH – JI Y. HU
KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES	KRA – KATHY R. ALBERTSON
LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA	MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING	MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON	NPM – NATHANIEL P. MILLER
PDM – PIERCE D. MORRIS	RAH – ROY A. HALSTEAD	RB – ROBERT BUCHANAN
REK – ROBERT E. KYER	RLK – ROBIN L. KLINGER	RWC – RODNEY W. CAMPBELL
SDH – SHANA D. HINYARD	SLM – STEPHANIE L. MOSSBURG	SLP – SHERI L. PFALZGRAF
TIP – TAE I. PARRISH	TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS
VC – VICKI COLLIER	WTD – WADE T. DELONG	

Qualkey: STD_ND=U

Qualifier	Description
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

COC NO. (DATE-01)

Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Microbac
Address : 158 Starlite Drive, Marietta OH 45750
Contact : Stephanie Mossburg
Phone: 1-800-373-4071

PM: Praveen Svrivastav (713.996.4588) TAT:
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: Pistol Range Site: Confirmation Sampling
Project #: 117591-0009B340 Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713) 247-9292
Sampler Sign: M. Willmore

Sample Number	Grab	Date	Time	Matrix	# of Containers	TCLP VOCs (8260)	TCLP SVOCs (8270) RCRA Metals	**RCI							Comments
PRRO758GR	X	8/6/09	13:10	Soil	3	X	X	X							Hold
PRRO859GR	X	8/6/09	13:15	Soil	3	X	X	X							Hold
PRRO731GR	X	8/6/09	13:20	Soil	3	X	X	X							Hold
PRRO906GR	X	8/6/09	13:25	Soil	3	X	X	X							Hold
PRRO1096GR	X	8/6/09	13:30	Soil	3	X	X	X							Hold
PRRO701GR	X	8/6/09	13:35	Soil	3	X	X	X							Hold
PRDSO1	X	8/6/09	13:45	Soil	3	X	X	X							24-HOUR TAT (Rolloffs B758, B859, B731, B906, B1096, B701)
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											

**RCI
Reactivity Cyanide-SW7.33
Reactivity Sulfide-SW7.34
Corrosivity pH-9045D
Ignitability-1010

Relinquished By: M. Willmore
Date/Time 8/6/09 17:30

Received By:
Date/Time

Special Instructions PRDSO1 is 24-HOUR TAT !! HOLD OTHER SAMPLES PENDING RESULTS FROM PRDSO1 !!

Relinquished By:
Date/Time

Received for Laboratory By:
Date/Time

Microbac OVD
Received: 08/07/2009 10:12
By: ERIN PORTER
221000000959
Erin Porter

00083024

COOLER INSPECTION

Received: 08/07/2009 10:12
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09080144 L09080145

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0013156	H	2.0	1Z66V7250195297569		

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct perservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Internal Chain of Custody Report

Login: L09080144
Account: 2773
Project: 2773.025
Samples: 1
Due Date: 11-AUG-2009

Samplenum	Container ID	Products
L09080144-01	604164	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:01	ERE	
2	PREP	W1	TCL	10-AUG-2009 06:34	RWC	RLK
3	STORE	TCL	A1	10-AUG-2009 09:38	RLK	RWC

Samplenum	Container ID	Products
L09080144-01	604165	REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:01	ERE	
2	ANALYZ	W1	WET	07-AUG-2009 12:04	JDH	RLK
3	STORE	WET	A1	12-AUG-2009 08:02	RLK	JBK

Samplenum	Container ID	Products
L09080144-01	604622	TC-ZHE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	11-AUG-2009 11:25	RLK	
2	PREP	W1	TCL	11-AUG-2009 11:49	RWC	RLK
3	STORE	TCL	A1	12-AUG-2009 08:46	RLK	RWC

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • http://www.microbac.com

Laboratory Report Number: L09080145

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	*Team Chemist/Data Specialist*	kalbertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	smossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	tlong@microbac.com
Amanda Fickiesen	*Client Services Specialist*	afickiesen@microbac.com
Annie Brown	*Client Services Specialist*	abrown@microbac.com

This report was reviewed on August 19, 2009.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on August 19, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 184 pages.

Look closer. Go further. Do more.

Microbac

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

Access and print reports, check the status of your projects, and review electronic data forms online from anywhere with internet access!

View a demo by visiting www.microbac.com and entering the Ohio Valley location
Click on "Online Data Access"
User ID: jdoe@abc.com
Password: demo

Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09080145
PREPARED FOR Shaw E I, Inc.
WORK ID:

1.0 Introduction

Laboratory Data Package Cover Page

00083031

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MAREN M. BEERY	Maren Beery	Metals Supervisor	August 18, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080145
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309804
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 18, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ED(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080145
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309804
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 18, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00083036

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MAREN M. BEERY	Maren Beery	Metals Supervisor	August 18, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080145
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG309777
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 18, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				ER1
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?	✓				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080145
Project Name:	798-LONGHORN
Method:	6010
Prep Batch Number(s):	WG309777
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 18, 2009

EXCEPTIONS REPORT
ER#1 - Due to a result within 20% of the regulatory limit, client sample 05 was analyzed for lead by the method of standard additions.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00083041

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

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DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 18, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080145
Project Name:	798-LONGHORN
Method:	PH
Prep Batch Number(s):	WG309734
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 18, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ED(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080145
Project Name:	798-LONGHORN
Method:	PH
Prep Batch Number(s):	WG309734
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 18, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00083046

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 18, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080145
Project Name:	798-LONGHORN
Method:	FLASHPOINT
Prep Batch Number(s):	WG309849
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 18, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080145
Project Name:	798-LONGHORN
Method:	FLASHPOINT
Prep Batch Number(s):	WG309849
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 18, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00083051

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 18, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080145
Project Name:	798-LONGHORN
Method:	REACTIVITY
Prep Batch Number(s):	WG309684, WG309685
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 18, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓		✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080145
Project Name:	798-LONGHORN
Method:	REACTIVITY
Prep Batch Number(s):	WG309684, WG309685
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 18, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Metals Data

2.1.1 Metals I C P Data

2.1.1.1 Summary Data

LABORATORY REPORT

00083059

L09080145

08/19/09 09:25

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRR0758GR	L09080145-01	6010B	1	07-AUG-09
PRR0859GR	L09080145-02	6010B	1	07-AUG-09
PRR0731GR	L09080145-03	6010B	1	07-AUG-09
PRR0906GR	L09080145-04	6010B	1	07-AUG-09
PRR01096GR	L09080145-05	6010B	2	07-AUG-09
PRR01096GR	L09080145-05	6010B	1	07-AUG-09
PRR0701GR	L09080145-06	6010B	1	07-AUG-09

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083060

Sample Number: **L09080145-01**
Client ID: **PRR0758GR**
Matrix: **Leachate**
Workgroup Number: **WG309827**
Collect Date: **08/06/2009 13:10**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **3015**
Analytical Method: **6010B**
Analyst: **PDM**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **08/17/2009 07:19**
Cal Date: **08/17/2009 10:04**
Run Date: **08/17/2009 12:01**
File ID: **P2.081709.120151**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	1	.1	D004	5
Barium, TCLP	7440-39-3	1.13		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1	3.78		1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083061

Sample Number: **L09080145-02**
Client ID: **PRR0859GR**
Matrix: **Leachate**
Workgroup Number: **WG309827**
Collect Date: **08/06/2009 13:15**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **3015**
Analytical Method: **6010B**
Analyst: **PDM**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **08/17/2009 07:19**
Cal Date: **08/17/2009 10:04**
Run Date: **08/17/2009 12:21**
File ID: **P2.081709.122159**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	1	.1	D004	5
Barium, TCLP	7440-39-3	0.920		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1	3.09		1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083062

Sample Number: **L09080145-03**
Client ID: **PRR0731GR**
Matrix: **Leachate**
Workgroup Number: **WG309827**
Collect Date: **08/06/2009 13:20**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **3015**
Analytical Method: **6010B**
Analyst: **PDM**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **08/17/2009 07:19**
Cal Date: **08/17/2009 10:04**
Run Date: **08/17/2009 12:28**
File ID: **P2.081709.122836**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	1	.1	D004	5
Barium, TCLP	7440-39-3	0.862		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1	0.253	J	1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083063

Sample Number: **L09080145-04**
Client ID: **PRR0906GR**
Matrix: **Leachate**
Workgroup Number: **WG309827**
Collect Date: **08/06/2009 13:25**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **3015**
Analytical Method: **6010B**
Analyst: **PDM**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **08/17/2009 07:19**
Cal Date: **08/17/2009 10:04**
Run Date: **08/17/2009 12:35**
File ID: **P2.081709.123518**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	1	.1	D004	5
Barium, TCLP	7440-39-3	1.04		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1	0.985	J	1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083064

Sample Number:	L09080145-05	PrePrep Method:	1311	Instrument:	PE-ICP2
Client ID:	PRR01096GR	Prep Method:	3015	Prep Date:	08/17/2009 07:19
Matrix:	Leachate	Analytical Method:	6010B	Cal Date:	08/17/2009 10:04
Workgroup Number:	WG309827	Analyst:	PDM	Run Date:	08/17/2009 15:22
Collect Date:	08/06/2009 13:30	Dilution:	2	File ID:	P2.081709.152244
Sample Tag:	DL01	Units:	mg/L		

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Lead, TCLP	7439-92-1	5.15		2	.2	D008	5

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083065

Sample Number: **L09080145-05**
Client ID: **PRR01096GR**
Matrix: **Leachate**
Workgroup Number: **WG309827**
Collect Date: **08/06/2009 13:30**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **3015**
Analytical Method: **6010B**
Analyst: **PDM**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **08/17/2009 07:19**
Cal Date: **08/17/2009 10:04**
Run Date: **08/17/2009 12:42**
File ID: **P2.081709.124203**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	1	.1	D004	5
Barium, TCLP	7440-39-3	1.08		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

Sample Number: **L09080145-06**
Client ID: **PRR0701GR**
Matrix: **Leachate**
Workgroup Number: **WG309827**
Collect Date: **08/06/2009 13:35**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **3015**
Analytical Method: **6010B**
Analyst: **PDM**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **08/17/2009 07:19**
Cal Date: **08/17/2009 10:04**
Run Date: **08/17/2009 13:02**
File ID: **P2.081709.130205**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	1	.1	D004	5
Barium, TCLP	7440-39-3	0.939		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1	2.64		1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 6010 Calculations
Perkin Elmer Optima 4300 DV

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Example 6010 Calculations
Thermo Scientific IRIS Advantage

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Example 6010 Calculations
Thermo Scientific iCAP 6500

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and four standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

TCLP Non-Volatile

Analyst(s): Ruc

Date: 8-14-09

Analyst/Date		Analyst/Date	
Ruc 8-14-09		Ruc 8-15-09	
Time On	Temp On °C	Time Off	Temp Off °C
1400	23	715	23

Jug #	Sample #	Tests	Method	Fluid #	Matrix*	%Solid	Size Reduction Yes	Size Reduction No	Int. Wt. (g)	Fluid Vol. (mL)
D	08-0145-01	ME	1311	F-759	S	100		✓	100.06	2000
D	02								100.01	
D	03								100.05	
D	04								100.05	
D	05								100.00	
D	06								100.04	
D	08-179-01								100.06	
D	02								100.01	
D	03	SpK							100.03	
D	04								100.03	
D	05								100.02	
D	06								100.07	
D	07								100.04	
D	08								100.00	
N/A	FBLK				N/A	N/A			2000	

RWC 8-14-09

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: _____

Peer Review By: _____ Supervisor Review: _____

Microbac Laboratories Inc.
Microwave Digestion Log

00083072

Workgroup: WG309777
Analyst: VC
Spike Analyst: VC
Run Date: 08/17/2009 07:19
Method: 3015

SOP: ME407 Revison 10
Spike Solution: STD34340
Spike Witness: REK
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG309777-02	BLANK	17	5 mL	50 mL	203.295 g	203.279 g		
2	WG309732-01	FBLK	17	5 mL	50 mL	203.961 g	203.939 g		
3	WG309777-03	LCS	17	5 mL	50 mL	210.778 g	210.762 g	5 mL	
4	L09080145-01	SAMP	17	5 mL	50 mL	210.566 g	210.56 g		08/18/09
5	L09080145-02	SAMP	17	5 mL	50 mL	210.771 g	210.752 g		08/18/09
6	L09080145-03	SAMP	17	5 mL	50 mL	209.95 g	209.923 g		08/18/09
7	L09080145-04	SAMP	17	5 mL	50 mL	211.656 g	211.636 g		08/18/09
8	L09080145-05	SAMP	17	5 mL	50 mL	211.004 g	210.996 g		08/18/09
9	L09080145-06	SAMP	17	5 mL	50 mL	209.847 g	209.828 g		08/18/09
10	L09080179-01	SAMP	17	5 mL	50 mL	211.384 g	211.359 g		08/18/09
11	L09080179-02	SAMP	17	5 mL	50 mL	210.578 g	210.564 g		08/18/09
12	WG309777-01	REF	17	5 mL	50 mL	210.734 g	210.72 g		
13	L09080179-03	SAMP	17	5 mL	50 mL	210.734 g	210.72 g		08/18/09
14	L09080179-04	SAMP	17	5 mL	50 mL	208.236 g	208.226 g		08/18/09
15	L09080179-05	SAMP	17	5 mL	50 mL	209.114 g	209.097 g		08/18/09
16	L09080179-06	SAMP	17	5 mL	50 mL	209.537 g	209.528 g		08/18/09
17	L09080179-07	SAMP	17	5 mL	50 mL	212.193 g	212.177 g		08/18/09
18	L09080179-08	SAMP	17	5 mL	50 mL	210.148 g	210.132 g		08/18/09
19	WG309777-04	MS	17	5 mL	50 mL	211.357 g	211.335 g	5 mL	
20	WG309777-05	MSD	17	5 mL	50 mL	211.886 g	211.872 g	5 mL	

Analyst: Vicki Collins

Reviewer:

MW_DIG - Modified 07/02/2008
PDF ID: 1466333
Report generated: 08/17/2009 08:33

Microbac Laboratories Inc.

Instrument Run Log

Instrument: PE-ICP2 Dataset: 081709HR.CSV
Analyst1: PDM Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 10
Maintenance Log ID: 29811

Calibration Std: STD34504 ICV/CCV Std: STD34469 Post Spike: STD34340
ICSA: STD34193 ICSAB: STD34508 Int. Std: STD34683

Workgroups: 309827,309847,309846

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	P2.081709.093742	WG309865-01	Calibration Point		1		08/17/09 09:37
2	P2.081709.094421	WG309865-02	Calibration Point		1		08/17/09 09:44
3	P2.081709.095100	WG309865-03	Calibration Point		1		08/17/09 09:51
4	P2.081709.095739	WG309865-04	Calibration Point		1		08/17/09 09:57
5	P2.081709.100415	WG309865-05	Calibration Point		1		08/17/09 10:04
6	P2.081709.101007	WG309865-06	ICV 2nd Vendor		1		08/17/09 10:10
7	P2.081709.101607	WG309865-07	Initial Calibration Verification		1		08/17/09 10:16
8	P2.081709.102245	WG309865-08	Initial Calib Blank		1		08/17/09 10:22
9	P2.081709.102928	WG309865-09	Interference Check		1		08/17/09 10:29
10	P2.081709.103508	WG309865-10	Interference Check		1		08/17/09 10:35
11	P2.081709.104049	WG309865-11	CCV		1		08/17/09 10:40
12	P2.081709.104727	WG309865-12	CCB		1		08/17/09 10:47
13	P2.081709.112842	WG309865-13	CCV		1		08/17/09 11:28
14	P2.081709.113519	WG309865-14	CCB		1		08/17/09 11:35
15	P2.081709.114155	WG309777-02	Method/Prep Blank	5/50	1		08/17/09 11:41
16	P2.081709.114833	WG309777-03	Laboratory Control S	5/50	1		08/17/09 11:48
17	P2.081709.115508	WG309732-01	Fluid Blank		1		08/17/09 11:55
18	P2.081709.120151	L09080145-01	PRR0758GR	5/50	1		08/17/09 12:01
19	P2.081709.120840	WG309827-01	Post Digestion Spike		1	L09080145-01	08/17/09 12:08
20	P2.081709.121514	WG309827-02	Serial Dilution		5	L09080145-01	08/17/09 12:15
21	P2.081709.122159	L09080145-02	PRR0859GR	5/50	1		08/17/09 12:21
22	P2.081709.122836	L09080145-03	PRR0731GR	5/50	1		08/17/09 12:28
23	P2.081709.123518	L09080145-04	PRR0906GR	5/50	1		08/17/09 12:35
24	P2.081709.124203	L09080145-05	PRR01096GR	5/50	1		08/17/09 12:42
25	P2.081709.124847	WG309865-15	CCV		1		08/17/09 12:48
26	P2.081709.125526	WG309865-16	CCB		1		08/17/09 12:55
27	P2.081709.130205	L09080145-06	PRR0701GR	5/50	1		08/17/09 13:02
28	P2.081709.130849	L09080179-01	PRR0628GR	5/50	1		08/17/09 13:08
29	P2.081709.131527	L09080179-02	PRR0959GR	5/50	1		08/17/09 13:15
30	P2.081709.132214	WG309777-01	Reference Sample		1	L09080179-03	08/17/09 13:22
31	P2.081709.132856	WG309777-04	Matrix Spike	5/50	1	L09080179-03	08/17/09 13:28
32	P2.081709.133531	WG309777-05	Matrix Spike Duplica	5/50	1	L09080179-03	08/17/09 13:35
33	P2.081709.134213	WG309865-17	CCV		1		08/17/09 13:42
34	P2.081709.134851	WG309865-18	CCB		1		08/17/09 13:48
35	P2.081709.135530	L09080179-04	PRR01022GR	5/50	1		08/17/09 13:55
36	P2.081709.140213	L09080179-05	PRR01111GR	5/50	1		08/17/09 14:02
37	P2.081709.140855	L09080179-06	PRR01113GR	5/50	1		08/17/09 14:08

Page: 1 Approved: August 18, 2009

Maren Berry

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: PE-ICP2 Dataset: 081709HR.CSV
Analyst1: PDM Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 10
Maintenance Log ID: 29811

Calibration Std: STD34504 ICV/CCV Std: STD34469 Post Spike: STD34340
ICSA: STD34193 ICSAB: STD34508 Int. Std: STD34683

Workgroups: 309827,309847,309846

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	P2.081709.141533	L09080179-07	PRR0542GR	5/50	1		08/17/09 14:15
39	P2.081709.142219	L09080179-08	PRR0674GR	5/50	1		08/17/09 14:22
40	P2.081709.142903	WG309865-19	CCV		1		08/17/09 14:29
41	P2.081709.143542	WG309865-20	CCB		1		08/17/09 14:35
42	P2.081709.144116	WG309796-02	Method/Prep Blank	50/50	1		08/17/09 14:41
43	P2.081709.144753	WG309796-03	Laboratory Control S	50/50	1		08/17/09 14:47
44	P2.081709.145437	WG309796-04	Filter Blank		1		08/17/09 14:54
45	P2.081709.150219	L09080216-02	C-004		1		08/17/09 15:02
46	P2.081709.150901	WG309847-01	Post Digestion Spike		1	L09080216-02	08/17/09 15:09
47	P2.081709.151606	WG309847-02	Serial Dilution		5	L09080216-02	08/17/09 15:16
48	P2.081709.152244	L09080145-05	PRR01096GR	5/50	2		08/17/09 15:22
49	P2.081709.152922	+.25	+.25		1		08/17/09 15:29
50	P2.081709.153603	+.375	+.375		1		08/17/09 15:36
51	P2.081709.154237	+.5	+.5		1		08/17/09 15:42
52	P2.081709.154919	WG309865-21	CCV		1		08/17/09 15:49
53	P2.081709.155505	WG309865-22	CCB		1		08/17/09 15:55
54	P2.081709.160144	L09080287-01	EFFLUENT/001/COMP	50/50	1		08/17/09 16:01
55	P2.081709.160827	L09080294-01	001/COMP.	50/50	1		08/17/09 16:08
56	P2.081709.161513	L09080297-01	OUTLET 001	50/50	1		08/17/09 16:15
57	P2.081709.162052	L09080297-02	OUTLET 002	50/50	1		08/17/09 16:20
58	P2.081709.162645	L09080297-03	OUTLET 003	50/50	1		08/17/09 16:26
59	P2.081709.163326	WG309796-01	Reference Sample		1	L09080319-01	08/17/09 16:33
60	P2.081709.164010	WG309796-05	Matrix Spike	50/50	1	L09080319-01	08/17/09 16:40
61	P2.081709.164651	WG309796-06	Matrix Spike Duplica	50/50	1	L09080319-01	08/17/09 16:46
62	P2.081709.165333	L09080330-01	OUTFALL 001/COMP	50/50	1		08/17/09 16:53
63	P2.081709.170012	WG309865-23	CCV		1		08/17/09 17:00
64	P2.081709.170702	WG309865-24	CCB		1		08/17/09 17:07
65	P2.081709.171341	WG309801-01	Method/Prep Blank	50/50	1		08/17/09 17:13
66	P2.081709.172019	WG309801-02	Laboratory Control S	50/50	1		08/17/09 17:20
67	P2.081709.172706	WG309801-03	Laboratory Control S	50/50	1		08/17/09 17:27
68	P2.081709.173349	L09080274-01	1184-W0001	50/50	1		08/17/09 17:33
69	P2.081709.174027	WG309846-01	Post Digestion Spike		1	L09080274-01	08/17/09 17:40
70	P2.081709.174712	WG309801-02	Laboratory Control S		5		08/17/09 17:47
71	P2.081709.175355	L09080274-02	1184-W0002	50/50	1		08/17/09 17:53
72	P2.081709.180032	L09080274-03	1227-W0001	50/50	1		08/17/09 18:00
73	P2.081709.180721	L09080274-04	1230-W0001	50/50	1		08/17/09 18:07
74	P2.081709.181408	L09080274-05	1264-W0001	50/50	1		08/17/09 18:14

Page: 2 Approved: August 18, 2009

Maren Berry

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: PE-ICP2 Dataset: 081709HR.CSV
Analyst1: PDM Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 10
Maintenance Log ID: 29811

Calibration Std: STD34504 ICV/CCV Std: STD34469 Post Spike: STD34340
ICSA: STD34193 ICSAB: STD34508 Int. Std: STD34683

Workgroups: 309827,309847,309846

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
75	P2.081709.182049	WG309865-25	CCV		1		08/17/09 18:20
76	P2.081709.182746	WG309865-26	CCB		1		08/17/09 18:27
77	P2.081709.183429	L09080274-06	1320-W0001	50/50	1		08/17/09 18:34
78	P2.081709.184106	L09080274-07	1352-W0001	50/50	1		08/17/09 18:41
79	P2.081709.184747	L09080274-08	1354-W0001	50/50	1		08/17/09 18:47
80	P2.081709.185435	L09080274-09	1380-W0001	50/50	1		08/17/09 18:54
81	P2.081709.190113	L09080274-10	1400-W0001	50/50	1		08/17/09 19:01
82	P2.081709.190759	L09080274-11	1422-W0001	50/50	1		08/17/09 19:07
83	P2.081709.191546	L09080282-01	13416-W0001	50/50	1		08/17/09 19:15
84	P2.081709.192224	L09080328-13	AV-NCB-EB-1-081309	50/50	1		08/17/09 19:22
85	P2.081709.192911	WG309865-27	CCV		1		08/17/09 19:29
86	P2.081709.193552	WG309865-28	CCB		1		08/17/09 19:35

Comments

Seq.	Rerun	Dil.	Reason	Analytes
6			ICV was immediately reanalyzed due to noncompliance of multiple analytes.	

 Approved: August 18, 2009

Maren Berry

Microbac®

Microbac Laboratories Inc.

Data Checklist

Date: 17-AUG-2009
Analyst: PDM
Analyst: NA
Method: 6010B
Instrument: PE-ICP2
Curve Workgroup: WG309865
Runlog ID: 29647
Analytical Workgroups: WG309827,WG309847,WG309846

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	X
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	0145,0179,0216,0287,0319,0330,0274
	0282,0328,
Client Forms	X
Level X	
Level 3	0145,0179
Level 4	0274,0282,0328
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	PDM
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
18-AUG-2009
Pierce Morris

Secondary Reviewer:
18-AUG-2009
Maren Berry

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-18-2009 15:17:54

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00083077

Analytical Method:6010B AAB#:WG309827

Login Number:L09080145

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRR0758GR	01	08/06/09	08/14/09	8			08/17/09	10.8	180		08/17/09	2.9	180	
PRR0859GR	02	08/06/09	08/14/09	8			08/17/09	10.8	180		08/17/09	2.9	180	
PRR0731GR	03	08/06/09	08/14/09	8			08/17/09	10.7	180		08/17/09	2.9	180	
PRR0906GR	04	08/06/09	08/14/09	8			08/17/09	10.7	180		08/17/09	2.9	180	
PRR01096GR	05	08/06/09	08/14/09	8			08/17/09	10.7	180		08/17/09	3.1	180	
PRR01096GR	05	08/06/09	08/14/09	8			08/17/09	10.7	180		08/17/09	2.9	180	
PRR0701GR	06	08/06/09	08/14/09	8			08/17/09	10.7	180		08/17/09	3	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1466893
Report generated 08/17/2009 16:07

METHOD BLANK SUMMARY

Login Number: L09080145
Work Group: WG309827
Blank File ID: P2.081709.114155
Blank Sample ID: WG309777-02
Prep Date: 08/17/09 07:19
Instrument ID: PE-ICP2
Analyzed Date: 08/17/09 11:41
Method: 6010B
Analyst: PDM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309777-03	P2.081709.114833	08/17/09 11:48	01
PRR0758GR	L09080145-01	P2.081709.120151	08/17/09 12:01	01
PRR0859GR	L09080145-02	P2.081709.122159	08/17/09 12:21	01
PRR0731GR	L09080145-03	P2.081709.122836	08/17/09 12:28	01
PRR0906GR	L09080145-04	P2.081709.123518	08/17/09 12:35	01
PRR01096GR	L09080145-05	P2.081709.124203	08/17/09 12:42	01
PRR0701GR	L09080145-06	P2.081709.130205	08/17/09 13:02	01
PRR01096GR	L09080145-05	P2.081709.152244	08/17/09 15:22	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1466894
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.

METHOD BLANK REPORT

00083079

Login Number:L09080145 Prep Date:08/17/09 07:19 Sample ID:WG309777-02
Instrument ID:PE-ICP2 Run Date:08/17/09 11:41 Prep Method:3015
File ID:P2.081709.114155 Analyst:PDM Method:6010B
Workgroup (AAB#):WG309827 Matrix:Leachate Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:PE-ICP-17-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Arsenic, TCLP	0.100	1.00	0.100	1	U
Barium, TCLP	0.0250	0.100	0.0250	1	U
Cadmium, TCLP	0.0250	0.100	0.0250	1	U
Chromium, TCLP	0.0250	0.200	0.0250	1	U
Lead, TCLP	0.100	1.00	0.100	1	U
Selenium, TCLP	0.400	0.800	0.400	1	U
Silver, TCLP	0.0500	0.100	0.0500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1466895
17-AUG-2009 16:07

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309777-03
Instrument ID: PE-ICP2 Run Time: 11:48 Prep Method: 3015
File ID: P2.081709.114833 Analyst: PDM Method: 6010B
Workgroup (AAB#): WG309827 Matrix: Leachate Units: mg/L
QC Key: STD Lot#: STD34340 Cal ID: PE-ICP-17-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Arsenic, TCLP	2.00	1.90	95.0	85 - 115	
Barium, TCLP	5.00	5.06	101	85 - 115	
Cadmium, TCLP	0.250	0.233	93.2	85 - 115	
Chromium, TCLP	2.50	2.53	101	85 - 115	
Lead, TCLP	2.50	2.40	96.1	85 - 115	
Selenium, TCLP	2.00	1.83	91.3	85 - 115	
Silver, TCLP	2.00	1.98	99.0	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 1466896
Report generated: 08/17/2009 16:07

Loginnum:L09080145 Cal ID: PE-ICP2- Worknum:WG309827
Instrument ID:PE-ICP2 Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG309777-01 File ID:P2.081709.132214 Dil:1 Matrix:WATER
Sample ID:WG309777-04 MS File ID:P2.081709.132856 Dil:1 Units:mg/L
Sample ID:WG309777-05 MSD File ID:P2.081709.133531 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Arsenic, TCLP	ND	2.00	2.00	99.8	2.00	1.99	99.4	0.387	80 - 120	20	
Barium, TCLP	1.12	5.00	6.30	104	5.00	6.13	100	2.78	80 - 120	20	
Cadmium, TCLP	ND	0.250	0.246	98.2	0.250	0.239	95.8	2.55	80 - 120	20	
Chromium, TCLP	ND	2.50	2.59	104	2.50	2.51	101	2.96	80 - 120	20	
Lead, TCLP	0.488	2.50	2.92	97.2	2.50	2.85	94.6	2.22	80 - 120	20	
Selenium, TCLP	ND	2.00	2.04	102	2.00	1.94	97.2	4.92	80 - 120	20	
Silver, TCLP	ND	2.00	2.09	104	2.00	2.03	101	3.12	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID:1466897
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
Serial Dilution Report

Login: L09080145 **Worknum:** WG309827
Instrument: PE-ICP2 **Method:** 6010B
Serial Dil: WG309827-02 **File ID:** P2.081709.121514 **Dil:** 5 **Units:** mg/L
Sample: L09080145-01 **File ID:** P2.081709.120151 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Arsenic	ND	U	ND	U		
Barium	.113	X	.1095	X	3.10	
Cadmium	ND	U	ND	U		
Chromium	ND	U	ND	U		
Lead	.378	X	.393	F	3.97	
Selenium	ND	U	ND	U		
Silver	ND	U	ND	U		

U = Result is below MDL.
F = Result is greater than or equal to MDL and less than the RL.
X = Result is greater than or equal to RL and less than 50 times the MDL.
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 50 times the MDL.

SERIAL_DIL - Modified 09/22/2008
PDF File ID: 1466891
08/17/2009 16:07

Sample Login ID: L09080145 **Worknum:** WG309827
Instrument ID: PE-ICP2 **Method:** 6010B
Post Spike ID: WG309827-01 **File ID:** P2.081709.120840 **Dil:** 1 **Units:** mg/L
Sample ID: L09080145-01 **File ID:** P2.081709.120151 **Dil:** 1 **Matrix:** Leachate

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ARSENIC	0.202		0	U	.2	101.1	75 - 125	
BARIUM	0.623		0.113		.5	104.4	75 - 125	
CADMIUM	0.0246		0	U	.025	98.3	75 - 125	
CHROMIUM	0.260		0	U	.25	103.9	75 - 125	
LEAD	0.587		0.378		.25	98.9	75 - 125	
SELENIUM	0.206		0	U	.2	103.1	75 - 125	
SILVER	0.208		0	U	.2	103.9	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1466892
Report generated: 08/17/2009 16:07

Microbac Laboratories Inc.
Initial Calibration Summary

Login:	**L09080145**	Workgroup (AAB#):	**WG309827**
Analytical Method:	**6010B**	Instrument ID:	**PE-ICP2**
ICAL Worknum:	**WG309865**	Initial Calibration Date:	**17-AUG-2009 10:04**

	WG309865-01		WG309865-02		WG309865-03		WG309865-04		WG309865-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ARSENIC	0	1.19	NA	NA	.008	5.51	.4	279	.8	568	.999964	
BARIUM	0	-124	.01	1080	.02	2210	1	102000	2	202000	.999991	
CADMIUM	0	0.444	.0005	27.1	.001	51.2	.05	2410	.1	4880	.999976	
CHROMIUM	0	35.1	.005	287	.01	563	.5	25200	1	49800	.999983	
LEAD	0	44.7	.005	21.3	.01	44.9	.5	2220	1	4470	.999998	
SELENIUM	0	-2.07	NA	NA	.008	3.69	.4	137	.8	276	.999992	
SILVER	0	86.2	.004	646	.008	1310	.4	55900	.8	111000	.999988	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

INT_CAL_ICP - Modified 03/06/2008
PDF File ID: 1466900
Report generated: 17-AUG-2009 16:07

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-08
Instrument ID: PE-ICP2 Run Time: 10:22 Method: 6010B
File ID: P2.081709.102245 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309827 Cal ID: PE-ICP2 - 17-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.01	.1	.01	U
BARIUM	.0025	.01	.0025	U
CADMIUM	.0025	.01	.0025	U
CHROMIUM	.0025	.02	.0025	U
LEAD	.01	.1	.01	U
SELENIUM	.04	.08	.04	U
SILVER	.005	.01	.005	U

ICB - Modified 07/14/2009
PDF File ID: 1466902
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083086

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-12
Instrument ID: PE-ICP2 Run Time: 10:47 Method: 6010B
File ID: P2.081709.104727 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	0.00250	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1466905
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083087

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-14
Instrument ID: PE-ICP2 Run Time: 11:35 Method: 6010B
File ID: P2.081709.113519 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	0.00250	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1466905
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083088

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-16
Instrument ID: PE-ICP2 Run Time: 12:55 Method: 6010B
File ID: P2.081709.125526 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	0.00250	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1466905
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083089

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-18
Instrument ID: PE-ICP2 Run Time: 13:48 Method: 6010B
File ID: P2.081709.134851 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	0.00250	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1466905
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083090

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-20
Instrument ID: PE-ICP2 Run Time: 14:35 Method: 6010B
File ID: P2.081709.143542 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	0.00250	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1466905
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083091

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-22
Instrument ID: PE-ICP2 Run Time: 15:55 Method: 6010B
File ID: P2.081709.155505 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	0.00250	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1466905
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00083092

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-07
Instrument ID: PE-ICP2 Run Time: 10:16 Method: 6010B
File ID: P2.081709.101607 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Arsenic		.4	0.387	96.8	90 - 110	
Barium		1	1.00	100	90 - 110	
Cadmium		.05	0.0482	96.4	90 - 110	
Chromium		.5	0.504	101	90 - 110	
Lead		.5	0.487	97.4	90 - 110	
Selenium		.4	0.402	100	90 - 110	
Silver		.4	0.403	101	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1466901
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083093

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-11
Instrument ID: PE-ICP2 Run Time: 10:40 Method: 6010B
File ID: P2.081709.104049 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.405	mg/L	101	90 - 110		
Barium		1.00	1.05	mg/L	105	90 - 110		
Cadmium		0.0500	0.0505	mg/L	101	90 - 110		
Chromium		0.500	0.529	mg/L	106	90 - 110		
Lead		0.500	0.507	mg/L	101	90 - 110		
Selenium		0.400	0.419	mg/L	105	90 - 110		
Silver		0.400	0.429	mg/L	107	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1466904
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083094

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-13
Instrument ID: PE-ICP2 Run Time: 11:28 Method: 6010B
File ID: P2.081709.112842 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.406	mg/L	102	90 - 110		
Barium		1.00	1.02	mg/L	102	90 - 110		
Cadmium		0.0500	0.0498	mg/L	99.7	90 - 110		
Chromium		0.500	0.516	mg/L	103	90 - 110		
Lead		0.500	0.500	mg/L	99.9	90 - 110		
Selenium		0.400	0.407	mg/L	102	90 - 110		
Silver		0.400	0.419	mg/L	105	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1466904
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083095

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-15
Instrument ID: PE-ICP2 Run Time: 12:48 Method: 6010B
File ID: P2.081709.124847 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.396	mg/L	99.0	90 - 110		
Barium		1.00	1.03	mg/L	103	90 - 110		
Cadmium		0.0500	0.0490	mg/L	98.1	90 - 110		
Chromium		0.500	0.519	mg/L	104	90 - 110		
Lead		0.500	0.499	mg/L	99.7	90 - 110		
Selenium		0.400	0.408	mg/L	102	90 - 110		
Silver		0.400	0.413	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1466904
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083096

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-17
Instrument ID: PE-ICP2 Run Time: 13:42 Method: 6010B
File ID: P2.081709.134213 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.401	mg/L	100	90 - 110		
Barium		1.00	1.01	mg/L	101	90 - 110		
Cadmium		0.0500	0.0492	mg/L	98.4	90 - 110		
Chromium		0.500	0.510	mg/L	102	90 - 110		
Lead		0.500	0.492	mg/L	98.5	90 - 110		
Selenium		0.400	0.403	mg/L	101	90 - 110		
Silver		0.400	0.413	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1466904
Report generated 08/17/2009 16:07

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00083097

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-19

Instrument ID: PE-ICP2 Run Time: 14:29 Method: 6010B

File ID: P2.081709.142903 Analyst: PDM QC Key: STD

Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09

Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.409	mg/L	102	90 - 110		
Barium		1.00	1.05	mg/L	105	90 - 110		
Cadmium		0.0500	0.0501	mg/L	100	90 - 110		
Chromium		0.500	0.532	mg/L	106	90 - 110		
Lead		0.500	0.502	mg/L	100	90 - 110		
Selenium		0.400	0.412	mg/L	103	90 - 110		
Silver		0.400	0.429	mg/L	107	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1466904

Report generated 08/17/2009 16:07

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083098

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309865-21
Instrument ID: PE-ICP2 Run Time: 15:49 Method: 6010B
File ID: P2.081709.154919 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309827 Cal ID: PE-ICP - 17-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.399	mg/L	99.9	90 - 110		
Barium		1.00	1.05	mg/L	105	90 - 110		
Cadmium		0.0500	0.0484	mg/L	96.8	90 - 110		
Chromium		0.500	0.531	mg/L	106	90 - 110		
Lead		0.500	0.498	mg/L	99.6	90 - 110		
Selenium		0.400	0.403	mg/L	101	90 - 110		
Silver		0.400	0.419	mg/L	105	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1466904
Report generated 08/17/2009 16:07

Login number: L09080145 **Workgroup (AAB#):** WG309827
Instrument ID: PE-ICP2 **Method:** 6010B
Sol. A : WG309865-09 **File ID:** P2.081709.102928 **Units:** mg/L
Sol. AB : WG309865-10 **File ID:** P2.081709.103508 **Matrix:** Leachate

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Arsenic	NS	-0.000950	NS	NS	0.241	NS	
Barium	NS	-0.0000900	NS	0.250	0.245	98.0	
Cadmium	NS	-0.0000100	NS	0.500	0.422	84.4	
Chromium	NS	-0.00111	NS	0.250	0.242	96.8	
Lead	NS	-0.000380	NS	0.500	0.460	92.0	
Selenium	NS	-0.000500	NS	NS	0.230	NS	
Silver	NS	-0.00185	NS	0.500	0.505	101	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

Login Number: L09080145 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	AG	AL	AS	B	BA
ALUMINUM	396.15	0	0	0.206	0	0
ANTIMONY	206.84	0	0	-0.740	0	0
ARSENIC	188.98	0	-0.00216	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	-0.370	0.0414	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	-1.07
COPPER	327.39	0	0	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	0	-0.107	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0	0	0	0
MANGANESE	257.61	-0.185	0	-0.231	-0.0949	-0.230
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.207	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0.200	0	0.0400
ZINC	206.20	0	0.0753	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1466899
Report generated: 08/17/2009 16:07

Login Number: L09080145 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	BE	CA	CD	CO	CR
ALUMINUM	396.15	0	0.274	0	0	0
ANTIMONY	206.84	0	0	0	0	19.8
ARSENIC	188.98	0	-0.00673	-0.0875	0	-2.91
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	-0.0105
BORON	249.68	0	0	50.1	3.51	1.50
CADMIUM	228.80	0	0	0	-5.41	0
CALCIUM	227.55	0	0	0	126	-21.8
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0.156
COPPER	327.39	0	0	0	0.380	-0.0467
IRON	239.56	0	0.0227	0	1.91	0.331
LEAD	220.35	0	-0.0247	0	0.666	-0.0700
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.638	0	0	0
MANGANESE	257.61	-1.04	0.0280	-0.755	-0.0418	-0.110
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0.623	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.0190	0	-0.633	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	-0.0100	0	0.953	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	-0.0233	0	0	0.297
VANADIUM	290.88	0	-0.00100	0	0	0
ZINC	206.20	0	-0.0333	15.3	0	-7.08

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1466899
Report generated: 08/17/2009 16:07

Login Number: L09080145 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	CU	FE	K	LI	MG
ALUMINUM	396.15	0	0.108	0	0	0
ANTIMONY	206.84	0	0	0	0	0
ARSENIC	188.98	0	0.00251	0	0	0
BARIUM	233.53	0	0.0520	0	0	0
BERYLLIUM	234.86	0	0.152	0	0	0
BORON	249.68	0	-4.02	0	0	0
CADMIUM	228.80	0	-0.00274	0	0	0
CALCIUM	227.55	-2.44	-4.01	0	0	0.104
CHROMIUM	267.72	0	-0.0239	0	0	0
COBALT	228.62	0	0.00949	0	0	0
COPPER	327.39	0	-0.0851	0	0.154	0.0143
IRON	239.56	0	0	0	0	0.0276
LEAD	220.35	0.551	0.103	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.174	0	0	0
MANGANESE	257.61	-0.0457	-0.156	-0.0181	-0.794	0.0147
MOLYBDENUM	202.03	0	-0.0494	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	-0.0451	0	0	0
SELENIUM	196.03	0	-1.01	0	0	-0.0113
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0.0717	-0.00209	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0.138	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0.0715	0	0	-0.0400
ZINC	206.20	-0.200	-0.0563	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1466899
Report generated: 08/17/2009 16:07

Login Number: L09080145 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	MN	MO	NA	NI	PB
ALUMINUM	396.15	0	32.9	0	0	0
ANTIMONY	206.84	0	-17.4	0	0	0
ARSENIC	188.98	0	3.66	0	0	0
BARIUM	233.53	0	-0.548	0	0	0
BERYLLIUM	234.86	-0.131	-0.529	0	-0.00974	0
BORON	249.68	0	-2.08	0	0	0
CADMIUM	228.80	0	0.0112	0	-0.0299	0
CALCIUM	227.55	0	-18.6	0	-1090	0
CHROMIUM	267.72	0.434	-0.00100	0	0	0
COBALT	228.62	0	-0.835	0	0.129	0
COPPER	327.39	0.136	-0.0774	0	0.150	0.257
IRON	239.56	0.480	0	0	0	0.407
LEAD	220.35	0.0756	-2.50	0	-0.174	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-5.58	0	0	0.0252
MANGANESE	257.61	0	-0.0482	-0.00916	-0.0340	-0.0413
MOLYBDENUM	202.03	-0.209	0	0	0.120	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	1.00	0	0
SELENIUM	196.03	0.451	0.199	0	0.0799	0
SILICON	251.61	0	12.9	0	0	0
SILVER	328.07	0.130	0.0781	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	-0.00100	1.20	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0.578	0	0	0
ZINC	206.20	0	0.180	0	-0.200	-0.100

CORR_FACTORS - Modified 03/05/2008
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Login Number: L09080145 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	SB	SE	SI	SN	SR
ALUMINUM	396.15	0	0	0	0	0
ANTIMONY	206.84	0	0	0	-10.6	0
ARSENIC	188.98	0	0	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	0	2.79	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0
COPPER	327.39	0	0.148	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	-0.0100	0	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-0.0924	0	0	0
MANGANESE	257.61	-0.0505	-0.0281	-0.185	-0.0445	-0.625
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	-0.0500	-0.0100	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0.200
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0	0	0
ZINC	206.20	-0.300	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1466899
Report generated: 08/17/2009 16:07

Login Number: L09080145 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	TI	TL	V	ZN
ALUMINUM	396.15	0	0	0	0
ANTIMONY	206.84	0	0	-3.59	0
ARSENIC	188.98	0	0	0.0930	0
BARIUM	233.53	0	0	-1.83	0
BERYLLIUM	234.86	0	0	0	0
BORON	249.68	0	0	0	0
CADMIUM	228.80	0	0	0.0940	0
CALCIUM	227.55	0	0	19.1	0
CHROMIUM	267.72	0	0	-0.567	-0.0400
COBALT	228.62	2.21	0	0	0
COPPER	327.39	-1.05	0	-0.603	0
IRON	239.56	0	0	0	-0.0613
LEAD	220.35	-0.441	0	-0.150	0
LITHIUM	670.78	0	0	0	0
MAGNESIUM	279.08	0	0	-0.0280	0
MANGANESE	257.61	-0.00931	-0.0414	-0.0601	-0.0553
MOLYBDENUM	202.03	0	0	-0.288	0
NICKEL	231.60	0	0.617	0	0
POTASSIUM	766.49	0	0	0	0
SELENIUM	196.03	-0.220	0	0.823	0
SILICON	251.61	0	0	0	0
SILVER	328.07	0	0	-5.47	0
SODIUM	589.59	0	0	0	0
STRONTIUM	407.77	0	0	0	0
THALLIUM	190.80	-4.00	0	0	0
TIN	189.93	0	0	0	0
TITANIUM	334.94	0	0	0	0
VANADIUM	290.88	0	0	0	0
ZINC	206.20	0	0	-0.100	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1466899
Report generated: 08/17/2009 16:07

Login Number: L09080145 **Date:** 06/30/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	450.0
Antimony	10.00	45.0
Arsenic	10.00	9.0
Barium	10.00	9.0
Beryllium	10.00	4.5
Boron	10.00	45.0
Cadmium	10.00	9.0
Calcium	10.00	450.0
Chromium	10.00	45.0
Cobalt	10.00	45.0
Copper	10.00	45.0
Iron	10.00	450.0
Lead	10.00	90.0
Lithium	10.00	0.8
Magnesium	10.00	450.0
Manganese	10.00	27.0
Molybdenum	10.00	45.0
Nickel	10.00	45.0
Potassium	10.00	90.0
Selenium	10.00	45.0
Silicon	10.00	36.0
Silver	10.00	4.5
Sodium	10.00	180.0
Strontium	10.00	4.5
Thallium	10.00	45.0
Tin	10.00	45.0
Titanium	10.00	45.0
Vanadium	10.00	45.0
Zinc	10.00	45.0

Comments:
All analytes passed acceptance criteria at the specified concentration.

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1466898
Report generated: 08/17/2009 16:07

2.1.2 Metals CVAA Data (Mercury)

2.1.2.1 Summary Data

LABORATORY REPORT

00083109

L09080145

08/19/09 09:25

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRR0758GR	L09080145-01	7470A	1	07-AUG-09
PRR0859GR	L09080145-02	7470A	1	07-AUG-09
PRR0731GR	L09080145-03	7470A	1	07-AUG-09
PRR0906GR	L09080145-04	7470A	1	07-AUG-09
PRR01096GR	L09080145-05	7470A	1	07-AUG-09
PRR0701GR	L09080145-06	7470A	1	07-AUG-09

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083110

Sample Number:	L09080145-01	PrePrep Method:	1311	Instrument:	HYDRA
Client ID:	PRR0758GR	Prep Method:	7470A	Prep Date:	08/17/2009 09:02
Matrix:	Leachate	Analytical Method:	7470A	Cal Date:	08/17/2009 12:31
Workgroup Number:	WG309836	Analyst:	SLP	Run Date:	08/17/2009 12:52
Collect Date:	08/06/2009 13:10	Dilution:	1	File ID:	HY.081709.125221
Sample Tag:	01	Units:	mg/L		

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083111

Sample Number:	L09080145-02	PrePrep Method:	1311	Instrument:	HYDRA
Client ID:	PRR0859GR	Prep Method:	7470A	Prep Date:	08/17/2009 09:02
Matrix:	Leachate	Analytical Method:	7470A	Cal Date:	08/17/2009 12:33
Workgroup Number:	WG309836	Analyst:	SLP	Run Date:	08/17/2009 12:56
Collect Date:	08/06/2009 13:15	Dilution:	1	File ID:	HY.081709.125617
Sample Tag:	01	Units:	mg/L		

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083112

Sample Number:	L09080145-03	PrePrep Method:	1311	Instrument:	HYDRA
Client ID:	PRR0731GR	Prep Method:	7470A	Prep Date:	08/17/2009 09:02
Matrix:	Leachate	Analytical Method:	7470A	Cal Date:	08/17/2009 12:33
Workgroup Number:	WG309836	Analyst:	SLP	Run Date:	08/17/2009 12:58
Collect Date:	08/06/2009 13:20	Dilution:	1	File ID:	HY.081709.125835
Sample Tag:	01	Units:	mg/L		

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

Sample Number:	**L09080145-04**	PrePrep Method:	**1311**	Instrument:	**HYDRA**
Client ID:	**PRR0906GR**	Prep Method:	**7470A**	Prep Date:	**08/17/2009 09:02**
Matrix:	**Leachate**	Analytical Method:	**7470A**	Cal Date:	**08/17/2009 12:35**
Workgroup Number:	**WG309836**	Analyst:	**SLP**	Run Date:	**08/17/2009 13:00**
Collect Date:	**08/06/2009 13:25**	Dilution:	**1**	File ID:	**HY.081709.130030**
Sample Tag:	**01**	Units:	**mg/L**		

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	**7439-97-6**		**U**	**.002**	**.001**	**D009**	**.2**

U Not detected at or above adjusted sample detection limit

Sample Number: **L09080145-05**
Client ID: **PRR01096GR**
Matrix: **Leachate**
Workgroup Number: **WG309836**
Collect Date: **08/06/2009 13:30**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **7470A**
Analytical Method: **7470A**
Analyst: **SLP**
Dilution: **1**
Units: **mg/L**

Instrument: **HYDRA**
Prep Date: **08/17/2009 09:02**
Cal Date: **08/17/2009 12:35**
Run Date: **08/17/2009 13:02**
File ID: **HY.081709.130213**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083115

Sample Number:	L09080145-06	PrePrep Method:	1311	Instrument:	HYDRA
Client ID:	PRR0701GR	Prep Method:	7470A	Prep Date:	08/17/2009 09:02
Matrix:	Leachate	Analytical Method:	7470A	Cal Date:	08/17/2009 12:35
Workgroup Number:	WG309836	Analyst:	SLP	Run Date:	08/17/2009 13:03
Collect Date:	08/06/2009 13:35	Dilution:	1	File ID:	HY.081709.130357
Sample Tag:	01	Units:	mg/L		

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

2.1.2.2 QC Summary Data

Example Cold Vapor Mercury Calculations
Hydra AA Mercury Analyzer

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and five standards.

2.0 Calculating the concentration (C) of an element in water using data from run log and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to Volume (mL)	40
Vi = Aliquot Volume (mL)	40
D = Manual dilution factor, if required (10X = 10)	1
Cx = Concentration of element in ppb (ug/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Ws} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to volume (mL)	40
Ws = Aliquot weight (g)	0.6
D = Manual dilution factor	1
Cx = Concentration of element in ug/kg	6.67

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

1 Cx = Concentration calculated as received (wet basis)	6.67
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (ug/kg)	8.33

8.33 ug/kg = 0.00833 mg/kg

TCLP Non-Volatile

Analyst(s): Ruc

Date: 8-14-09

Analyst/Date		Analyst/Date	
Ruc 8-14-09		Ruc 8-15-09	
Time On	Temp On °C	Time Off	Temp Off °C
1400	23	715	23

Jug #	Sample #	Tests	Method	Fluid #	Matrix*	%Solid	Size Reduction Yes	Size Reduction No	Int. Wt. (g)	Fluid Vol. (mL)
D	08-0145-01	ME	1311	F-759	S	100		✓	100.06	2000
D	02								100.01	
D	03								100.05	
D	04								100.05	
D	05								100.00	
D	06								100.04	
D	08-179-01								100.06	
D	02								100.01	
D	03	SpK							100.03	
D	04								100.03	
D	05								100.02	
D	06								100.07	
D	07								100.04	
D	08								100.00	
N/A	FBLK				N/A	N/A			2000	

Ruc 8-14-09

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: _____

Peer Review By: _____ Supervisor Review: _____

Microbac Laboratories Inc.
Metals Digest Log

00083119

Workgroup: WG309804
Analyst: REK
Spike Analyst: REK
Method: 7470A
Run Date: 08/17/2009 09:02
Hotblock Start Temp: 92.9 @ 07:45
Hotblock End Temp: 94.1 @ 09:45

SOP: ME404 Revison 12
Spike Solution: STD34685
Spike Witness: VC
H2SO4 Lot #: COA13254
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013
KMnO4 1:1 Lot #: RGT13913
K2S2O8 1:1 Lot #: RGT14066
Mercury Water ICV Lot #: STD34687
HG H2O STDS 10PPM Lot #: STD34693

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Spike Amount	Due Date
1	WG309804-02	BLANK	1	40 mL	40 mL		
2	WG309732-01	FBLK	17	4 mL	40 mL		
3	WG309804-03	LCS	1	40 mL	40 mL	4 mL	
4	L09080145-01	SAMP	17	4 mL	40 mL		08/18/09
5	L09080145-02	SAMP	17	4 mL	40 mL		08/18/09
6	L09080145-03	SAMP	17	4 mL	40 mL		08/18/09
7	L09080145-04	SAMP	17	4 mL	40 mL		08/18/09
8	L09080145-05	SAMP	17	4 mL	40 mL		08/18/09
9	L09080145-06	SAMP	17	4 mL	40 mL		08/18/09
10	L09080179-01	SAMP	17	4 mL	40 mL		08/18/09
11	L09080179-02	SAMP	17	4 mL	40 mL		08/18/09
12	WG309804-01	REF	17	4 mL	40 mL		
13	L09080179-03	SAMP	17	4 mL	40 mL		08/18/09
14	L09080179-04	SAMP	17	4 mL	40 mL		08/18/09
15	L09080179-05	SAMP	17	4 mL	40 mL		08/18/09
16	L09080179-06	SAMP	17	4 mL	40 mL		08/18/09
17	L09080179-07	SAMP	17	4 mL	40 mL		08/18/09
18	L09080179-08	SAMP	17	4 mL	40 mL		08/18/09
19	L09080328-13	SAMP	1	40 mL	40 mL		08/25/09
20	WG309804-04	MS	1	4 mL	40 mL	4 mL	
21	WG309804-05	MSD	1	4 mL	40 mL	4 mL	

Analyst: 

Reviewer: 

BLOCK_DIG - Modified 07/22/2008
PDF ID: 1466530
Report generated: 08/17/2009 10:13

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HYDRA Dataset: 081709A.PRN
Analyst1: SLP Analyst2: N/A
Method: 7470A SOP: ME404 Rev: 11
Maintenance Log ID: 29808

Calibration Std: STD34693 ICV/CCV Std: STD34687 Post Spike: STD34693
ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 309836

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.081709.122554	WG309856-01	Calibration Point		1		08/17/09 12:25
2	HY.081709.122737	WG309856-02	Calibration Point		1		08/17/09 12:27
3	HY.081709.122925	WG309856-03	Calibration Point		1		08/17/09 12:29
4	HY.081709.123120	WG309856-04	Calibration Point		1		08/17/09 12:31
5	HY.081709.123312	WG309856-05	Calibration Point		1		08/17/09 12:33
6	HY.081709.123525	WG309856-06	Calibration Point		1		08/17/09 12:35
7	HY.081709.123909	WG309856-07	Initial Calibration Verification		1		08/17/09 12:39
8	HY.081709.124114	WG309856-08	Initial Calib Blank		1		08/17/09 12:41
9	HY.081709.124307	WG309856-09	CCV		1		08/17/09 12:43
10	HY.081709.124450	WG309856-10	CCB		1		08/17/09 12:44
11	HY.081709.124643	WG309804-02	Method/Prep Blank	40/40	1		08/17/09 12:46
12	HY.081709.124838	WG309804-03	Laboratory Control S	40/40	1		08/17/09 12:48
13	HY.081709.125029	WG309732-01	Fluid Blank		1		08/17/09 12:50
14	HY.081709.125221	L09080145-01	PRR0758GR	4/40	1		08/17/09 12:52
15	HY.081709.125416	WG309836-01	Post Digestion Spike		1	L09080145-01	08/17/09 12:54
16	HY.081709.125617	L09080145-02	PRR0859GR	4/40	1		08/17/09 12:56
17	HY.081709.125835	L09080145-03	PRR0731GR	4/40	1		08/17/09 12:58
18	HY.081709.130030	L09080145-04	PRR0906GR	4/40	1		08/17/09 13:00
19	HY.081709.130213	L09080145-05	PRR01096GR	4/40	1		08/17/09 13:02
20	HY.081709.130357	L09080145-06	PRR0701GR	4/40	1		08/17/09 13:03
21	HY.081709.130539	WG309856-11	CCV		1		08/17/09 13:05
22	HY.081709.130721	WG309856-12	CCB		1		08/17/09 13:07
23	HY.081709.130903	L09080179-01	PRR0628GR	4/40	1		08/17/09 13:09
24	HY.081709.131106	L09080179-02	PRR0959GR	4/40	1		08/17/09 13:11
25	HY.081709.131248	L09080179-03	PRR0766GR	4/40	1	WG309804-01	08/17/09 13:12
26	HY.081709.131449	WG309804-04	Matrix Spike	4/40	1	L09080179-03	08/17/09 13:14
27	HY.081709.131634	WG309804-05	Matrix Spike Duplica	4/40	1	L09080179-03	08/17/09 13:16
28	HY.081709.131817	L09080179-04	PRR01022GR	4/40	1		08/17/09 13:18
29	HY.081709.132002	L09080179-05	PRR01111GR	4/40	1		08/17/09 13:20
30	HY.081709.132200	L09080179-06	PRR01113GR	4/40	1		08/17/09 13:22
31	HY.081709.132356	L09080179-07	PRR0542GR	4/40	1		08/17/09 13:23
32	HY.081709.132538	L09080179-08	PRR0674GR	4/40	1		08/17/09 13:25
33	HY.081709.132723	WG309856-13	CCV		1		08/17/09 13:27
34	HY.081709.132911	WG309856-14	CCB		1		08/17/09 13:29
35	HY.081709.133103	L09080328-13	AV-NCB-EB-1-081309	40/40	1		08/17/09 13:31
36	HY.081709.133300	WG309836-02	Post Digestion Spike		1	L09080328-13	08/17/09 13:33
37	HY.081709.133442	WG309856-15	CCV		1		08/17/09 13:34

Page: 1 Approved: August 18, 2009

Maren Berry

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HYDRA Dataset: 081709A.PRN
Analyst1: SLP Analyst2: N/A
Method: 7470A SOP: ME404 Rev: 11
Maintenance Log ID: 29808

Calibration Std: STD34693 ICV/CCV Std: STD34687 Post Spike: STD34693
ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 309836

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	HY.081709.133627	WG309856-16	CCB		1		08/17/09 13:36

Approved: August 18, 2009
Maren Berry

Microbac Laboratories Inc.

Data Checklist

Date: 17-AUG-2009
Analyst: SLP
Analyst: NA
Method: 7470A
Instrument: HYRDA
Curve Workgroup: 309856
Runlog ID: 29644
Analytical Workgroups: 309836

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	0145, 0179, 0328
Client Forms	X
Level X	
Level 3	0145, 0179
Level 4	0328
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	SLP
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
17-AUG-2009

Secondary Reviewer:
18-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-18-2009 09:19:43

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00083123

Analytical Method: 7470A AAB#: WG309836

Login Number: L09080145

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRR0758GR	01	08/06/09	08/14/09	8			08/17/09	10.8	28		08/17/09	3	28	
PRR0859GR	02	08/06/09	08/14/09	8			08/17/09	10.8	28		08/17/09	3	28	
PRR0731GR	03	08/06/09	08/14/09	8			08/17/09	10.8	28		08/17/09	3	28	
PRR0906GR	04	08/06/09	08/14/09	8			08/17/09	10.8	28		08/17/09	3	28	
PRR01096GR	05	08/06/09	08/14/09	8			08/17/09	10.8	28		08/17/09	3	28	
PRR0701GR	06	08/06/09	08/14/09	8			08/17/09	10.8	28		08/17/09	3	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1466801
Report generated 08/17/2009 13:55

METHOD BLANK SUMMARY

Login Number: L09080145
Work Group: WG309836
Blank File ID: HY.081709.124643
Blank Sample ID: WG309804-02
Prep Date: 08/17/09 09:02
Instrument ID: HYDRA
Analyzed Date: 08/17/09 12:46
Method: 7470A
Analyst: SLP

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309804-03	HY.081709.124838	08/17/09 12:48	01
PRR0758GR	L09080145-01	HY.081709.125221	08/17/09 12:52	01
PRR0859GR	L09080145-02	HY.081709.125617	08/17/09 12:56	01
PRR0731GR	L09080145-03	HY.081709.125835	08/17/09 12:58	01
PRR0906GR	L09080145-04	HY.081709.130030	08/17/09 13:00	01
PRR01096GR	L09080145-05	HY.081709.130213	08/17/09 13:02	01
PRR0701GR	L09080145-06	HY.081709.130357	08/17/09 13:03	01

Report Name: BLANK_SUMMARY
PDF File ID: 1466802
Report generated 08/17/2009 13:55

Microbac Laboratories Inc.

METHOD BLANK REPORT

00083125

Login Number: L09080145 Prep Date: 08/17/09 09:02 Sample ID: WG309804-02
Instrument ID: HYDRA Run Date: 08/17/09 12:46 Prep Method: 7470A
File ID: HY.081709.124643 Analyst: SLP Method: 7470A
Workgroup (AAB#): WG309836 Matrix: Leachate Units: mg/L
Contract #: DACA56-94-D-0020 Cal ID: HYDRA-17-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury	0.000100	0.000200	0.000100	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1466803
17-AUG-2009 13:55

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309804-03
Instrument ID: HYDRA Run Time: 12:48 Prep Method: 7470A
File ID: HY.081709.124838 Analyst: SLP Method: 7470A
Workgroup (AAB#): WG309836 Matrix: Leachate Units: mg/L
QC Key: STD Lot#: STD34685 Cal ID: HYDRA-17-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury	0.00400	0.00418	105	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 1466804
Report generated: 08/17/2009 13:55

Microbac Laboratories Inc.

MATRIX SPIKE AND MATRIX SPIKE DUP (MS/MSD)

00083127

Loginnum:L09080145 Cal ID: HYDRA- Worknum:WG309836

Instrument ID:HYDRA Contract #:DACA56-94-D-0020 Method:7470A

Parent ID:WG309804-01 File ID:HY.081709.131248 Dil:1 Matrix:WATER

Sample ID:WG309804-04 MS File ID:HY.081709.131449 Dil:1 Units:mg/L

Sample ID:WG309804-05 MSD File ID:HY.081709.131634 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Mercury	ND	0.0400	0.0421	105	0.0400	0.0433	108	2.81	85 - 115	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008

PDF File ID:1466805

Report generated 08/17/2009 13:55

Sample Login ID: L09080145 **Worknum:** WG309836
Instrument ID: HYDRA **Method:** 7470A
Post Spike ID: WG309836-01 **File ID:** HY.081709.125416 **Dil:** 1 **Units:** ug/L
Sample ID: L09080145-01 **File ID:** HY.081709.125221 **Dil:** 1 **Matrix:** Leachate

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	1.08		0	U	1	108.0	85 - 115	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1466800
Report generated: 08/17/2009 13:55

Login Number: L09080145
Analytical Method: 7470A
ICAL Worknum: WG309856

Workgroup (AAB#): WG309836
Instrument ID: HYDRA
Initial Calibration Date: 08/17/2009 12:35

Analyte	WG309856-01		WG309856-02		WG309856-03		WG309856-04		WG309856-05		WG309856-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	213	0.200	942	1.00	4411	2.00	8569	5.00	21366	10.0	43441

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1466806
Report generated 08/17/2009 13:55

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00083130

Login Number: L09080145
Analytical Method: 7470A
ICAL Worknum: WG309856

Workgroup (AAB#): WG309836
Instrument ID: HYDRA
Initial Calibration Date: 08/17/2009 12:35

Analyte	R	Q
Mercury	1.000	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1466806
Report generated 08/17/2009 13:55

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309856-08
Instrument ID: HYDRA Run Time: 12:41 Method: 7470A
File ID: HY.081709.124114 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG309836 Cal ID: HYDRA - 17-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
MERCURY	.1	.2	.1	U

ICB - Modified 07/14/2009
PDF File ID: 1466808
Report generated 08/17/2009 13:55

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083132

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309856-10
Instrument ID: HYDRA Run Time: 12:44 Method: 7470A
File ID: HY.081709.124450 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG309836 Cal ID: HYDRA - 17-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1466810
Report generated 08/17/2009 13:55

Microbac Laboratories Inc.

CONTINUING CALIBRATION BLANK (CCB)

00083133

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309856-12

Instrument ID: HYDRA Run Time: 13:07 Method: 7470A

File ID: HY.081709.130721 Analyst: SLP Units: ug/L

Workgroup (AAB#): WG309836 Cal ID: HYDRA - 17-AUG-09

Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008

PDF File ID: 1466810

Report generated 08/17/2009 13:55

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083134

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309856-14
Instrument ID: HYDRA Run Time: 13:29 Method: 7470A
File ID: HY.081709.132911 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG309836 Cal ID: HYDRA - 17-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1466810
Report generated 08/17/2009 13:55

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083135

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309856-16
Instrument ID: HYDRA Run Time: 13:36 Method: 7470A
File ID: HY.081709.133627 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG309836 Cal ID: HYDRA - 17-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1466810
Report generated 08/17/2009 13:55

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00083136

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309856-07
Instrument ID: HYDRA Run Time: 12:39 Method: 7470A
File ID: HY.081709.123909 Analyst: SLP Units: ug/L
Workgroup (AAB#): WG309836 Cal ID: HYDRA - 17-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Mercury		2	2.11	106	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1466807
Report generated 08/17/2009 13:55

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00083137

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309856-09

Instrument ID: HYDRA Run Time: 12:43 Method: 7470A

File ID: HY.081709.124307 Analyst: SLP QC Key: STD

Workgroup (AAB#): WG309836 Cal ID: HYDRA - 17-AUG-09

Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00206	mg/L	103	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1466809

Report generated 08/17/2009 13:55

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00083138

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309856-11

Instrument ID: HYDRA Run Time: 13:05 Method: 7470A

File ID: HY.081709.130539 Analyst: SLP QC Key: STD

Workgroup (AAB#): WG309836 Cal ID: HYDRA - 17-AUG-09

Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00201	mg/L	101	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1466809

Report generated 08/17/2009 13:55

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083139

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309856-13
Instrument ID: HYDRA Run Time: 13:27 Method: 7470A
File ID: HY.081709.132723 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG309836 Cal ID: HYDRA - 17-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00191	mg/L	95.5	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1466809
Report generated 08/17/2009 13:55

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083140

Login Number: L09080145 Run Date: 08/17/2009 Sample ID: WG309856-15
Instrument ID: HYDRA Run Time: 13:34 Method: 7470A
File ID: HY.081709.133442 Analyst: SLP QC Key: STD
Workgroup (AAB#): WG309836 Cal ID: HYDRA - 17-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00193	mg/L	96.5	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1466809
Report generated 08/17/2009 13:55

2.2 General Chemistry Data

2.2.1 Reactivity Data

2.2.1.1 Summary Data

LABORATORY REPORT

00083144

L09080145

08/19/09 09:25

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRR0758GR	L09080145-01	SW7.34	1	07-AUG-09
PRR0859GR	L09080145-02	SW7.34	1	07-AUG-09
PRR0731GR	L09080145-03	SW7.34	1	07-AUG-09
PRR0906GR	L09080145-04	SW7.34	1	07-AUG-09
PRR01096GR	L09080145-05	SW7.34	1	07-AUG-09
PRR0701GR	L09080145-06	SW7.34	1	07-AUG-09

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083145

Sample Number: **L09080145-01**
Client ID: **PRR0758GR**
Matrix: **Soil**
Workgroup Number: **WG309685**
Collect Date: **08/06/2009 13:10**

PrePrep Method: **NONE**
Prep Method: **SW7.34**
Analytical Method: **SW7.34**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **BURET**
Prep Date: **08/14/2009 08:32**
Cal Date:
Run Date: **08/14/2009 08:32**
File ID: **ET.0908140832-04**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

Sample Number: **L09080145-02**
Client ID: **PRR0859GR**
Matrix: **Soil**
Workgroup Number: **WG309685**
Collect Date: **08/06/2009 13:15**

PrePrep Method: **NONE**
Prep Method: **SW7.34**
Analytical Method: **SW7.34**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **BURET**
Prep Date: **08/14/2009 08:32**
Cal Date:
Run Date: **08/14/2009 08:32**
File ID: **ET.0908140832-05**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

Sample Number: **L09080145-03**
Client ID: **PRR0731GR**
Matrix: **Soil**
Workgroup Number: **WG309685**
Collect Date: **08/06/2009 13:20**

PrePrep Method: **NONE**
Prep Method: **SW7.34**
Analytical Method: **SW7.34**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **BURET**
Prep Date: **08/14/2009 08:32**
Cal Date:
Run Date: **08/14/2009 08:32**
File ID: **ET.0908140832-06**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

Sample Number: **L09080145-04**
Client ID: **PRR0906GR**
Matrix: **Soil**
Workgroup Number: **WG309685**
Collect Date: **08/06/2009 13:25**

PrePrep Method: **NONE**
Prep Method: **SW7.34**
Analytical Method: **SW7.34**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **BURET**
Prep Date: **08/14/2009 08:32**
Cal Date:
Run Date: **08/14/2009 08:32**
File ID: **ET.0908140832-07**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

Sample Number: **L09080145-05**
Client ID: **PRR01096GR**
Matrix: **Soil**
Workgroup Number: **WG309685**
Collect Date: **08/06/2009 13:30**

PrePrep Method: **NONE**
Prep Method: **SW7.34**
Analytical Method: **SW7.34**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **BURET**
Prep Date: **08/14/2009 08:32**
Cal Date:
Run Date: **08/14/2009 08:32**
File ID: **ET.0908140832-08**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083150

Sample Number: **L09080145-06**
Client ID: **PRR0701GR**
Matrix: **Soil**
Workgroup Number: **WG309685**
Collect Date: **08/06/2009 13:35**

PrePrep Method: **NONE**
Prep Method: **SW7.34**
Analytical Method: **SW7.34**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **BURET**
Prep Date: **08/14/2009 08:32**
Cal Date:
Run Date: **08/14/2009 08:32**
File ID: **ET.0908140832-09**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

2.2.1.2 QC Summary Data

Example Calculations - Reactive Sulfide

$$A = \frac{((B * C) - (D * E) * 16000}{F * G} = sulfide\,(mg / L)$$

$$\frac{A * I}{J} = reactive\ sulfide\ (mg / Kg)$$

Example Calculation:

B (mL of Iodine):	15
C (N of Iodine):	0.02514
D (mL of titrant):	9.4
E (N of titrant):	0.02489
16000 factor (1mL of 0.025N iodine reacts with 0.4mg sulfide):	16000
F (mL of scrubber solution used for titrating for sulfide):	100
G (dilution of sample (include 50/250 scrubber dilution)):	0.20
I (volume of NaOH placed in scrubber):	50
J (grams of sample used):	10
A=	114.5072
mg/Kg reactive sulfide=	572.536

Microbac Laboratories Inc.

Data Checklist

Date: 14-AUG-2009
Analyst: DLP
Analyst: NA
Method: REACTS
Instrument: BURET
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG309685

Calibration/Linearity	08-14-09
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	DLP
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
17-AUG-2009

Secondary Reviewer:
18-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-18-2009 14:41:49

2.2.1.3 Raw Data

WORKGROUP: WG309685

REACTIVE SULFIDE

☐ EPA ch. 7 SOP K7332 Revision #: 8
☐ Other
LCS Std 34680 Daily Dilution: 5(797)/200 = Instrument: buret
non-reacted LCS Daily Dilution = 19.925

Iodine standardization (0.025 N and 0.1N)
mL 10 N titrant: 0.0257
Volume I: 10 mL
Normality I: 0.0257

mL 8 N titrant: 0.0257
Volume I: 2 mL
Normality I: 0.103

Stock standardization (in duplicate)
mL I 1) 10 2) 10
N I 1) 0.103 2) 0.103
mL 0.025 titrant 1) 20.7 2) 20.7

797 = stock conc (mg/L)

SAMPLE	Grams Reacted	Volume Titrated	mL Iodine	N Iodine	ml 0.0257 N Sodium Thiosulfate 7-21-09
BLANK	X	200	15	0.0257	15.0
Non-reacted LCS (mg/L)	X	200	15		~~20~~ 5.3
Reacted (mg/L)	10.0	100	15		~~8-14-09~~ 11.0
08-145-01	10.025	100	5		5.0
-02	10.022				5.0
03	10.025				5.0
04	10.045				5.0
05	10.039				5.0
-06	10.035				5.0
08-179-01	10.038				5.0
-02	10.011				5.0
03	10.055				5.0
-04	10.014				5.0
-05	10.022				5.0
06	10.014				5.0
-07	10.011				5.0
-08	10.031				5.0
DUP: 08-179-07	10.007	100	5	0.0257	5.0

Analyst: Courtney Thayne Date / Time: 08-14-09/0832

DCN#80428

Microbac Laboratories Inc.
TITRAMETRIC REPORT

Workgroup (AAB#):WG309685 Analyst:DLP
Product:SW7.34 Run Date:08/14/2009 08:32
Analyte:Reactivity, Sulfide

SAMPLE NUMBER	Sample	Volume	Vol I	Nor I	Vol T	Nor T	Dil	NaOH	Scrub.	Anal.	Reported	Units
WG309685-01	250	200.0	15	.0257	15	.0257	1	50	250	0	0	mg/kg
WG309685-02	250	200.0	15	.0257	5.3	.0257	1	50	250	19.94	19.94	mg/kg
WG309685-03	10	100.0	15	.0257	11	.0257	1	50	250	411.2	411.2	mg/kg
L09080145-01	10.025	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080145-02	10.022	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080145-03	10.025	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080145-04	10.045	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080145-05	10.039	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080145-06	10.035	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080179-01	10.038	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080179-02	10.011	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080179-03	10.055	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080179-04	10.014	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080179-05	10.022	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080179-06	10.014	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080179-07	10.011	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
WG309685-04	10.011	100.0	5	.0257	5	.0257	1	50	250	0	0	mg/kg
L09080179-08	10.031	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
WG309685-05	10.007	100.0	5	.0257	5	.0257	1	50	250	0	0	mg/kg

REACTS_REPORT - Modified 03/06/2008

Report generated 08/17/2009 14:10

2.2.2 PH Data

2.2.2.1 Summary Data

LABORATORY REPORT

00083159

L09080145

08/19/09 09:25

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRR0758GR	L09080145-01	9045D	1	07-AUG-09
PRR0859GR	L09080145-02	9045D	1	07-AUG-09
PRR0731GR	L09080145-03	9045D	1	07-AUG-09
PRR0906GR	L09080145-04	9045D	1	07-AUG-09
PRR01096GR	L09080145-05	9045D	1	07-AUG-09
PRR0701GR	L09080145-06	9045D	1	07-AUG-09

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083160

Sample Number: **L09080145-01**
Client ID: **PRR0758GR**
Matrix: **Soil**
Workgroup Number: **WG309734**
Collect Date: **08/06/2009 13:10**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **DIH**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/14/2009 13:15**
Cal Date:
Run Date: **08/14/2009 13:15**
File ID: **OS09081708523801**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	**10-29-7**	**5.54**			

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083161

Sample Number: **L09080145-02**
Client ID: **PRR0859GR**
Matrix: **Soil**
Workgroup Number: **WG309734**
Collect Date: **08/06/2009 13:15**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **DIH**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/14/2009 13:15**
Cal Date:
Run Date: **08/14/2009 13:15**
File ID: **OS09081708525801**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	**10-29-7**	**5.48**			

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083162

Sample Number: **L09080145-03**
Client ID: **PRR0731GR**
Matrix: **Soil**
Workgroup Number: **WG309734**
Collect Date: **08/06/2009 13:20**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **DIH**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/14/2009 13:15**
Cal Date:
Run Date: **08/14/2009 13:15**
File ID: **OS09081708531801**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	**10-29-7**	**5.57**			

Sample Number: **L09080145-04**
Client ID: **PRR0906GR**
Matrix: **Soil**
Workgroup Number: **WG309734**
Collect Date: **08/06/2009 13:25**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **DIH**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/14/2009 13:15**
Cal Date:
Run Date: **08/14/2009 13:15**
File ID: **OS09081708533701**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	**10-29-7**	**5.54**			

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083164

Sample Number: **L09080145-05**
Client ID: **PRR01096GR**
Matrix: **Soil**
Workgroup Number: **WG309734**
Collect Date: **08/06/2009 13:30**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **DIH**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/14/2009 13:15**
Cal Date:
Run Date: **08/14/2009 13:15**
File ID: **OS09081708535101**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	**10-29-7**	**5.80**			

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083165

Sample Number: **L09080145-06**
Client ID: **PRR0701GR**
Matrix: **Soil**
Workgroup Number: **WG309734**
Collect Date: **08/06/2009 13:35**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **DIH**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/14/2009 13:15**
Cal Date:
Run Date: **08/14/2009 13:15**
File ID: **OS09081708541001**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	**10-29-7**	**6.44**			

2.2.2.2 QC Summary Data

Microbac Laboratories Inc.

Data Checklist

Date: 14-AUG-2009
Analyst: DIH
Analyst: NA
Method: PH
Instrument: ORION 4 STAR
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG309734

Calibration/Linearity	8/14/2009
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	
QC Violation Sheet	
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DIH
Secondary Reviewer	
Comments	

Primary Reviewer: Secondary Reviewer:
17-AUG-2009

Donna Olsson

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-17-2009 15:13:34

2.2.2.3 Raw Data

WORKGROUP: WG309734

pH

Sample	Calibration Buffers	Water Misc. Liquid	50% Slurry Of Solid	50% Water Org. Liq. Mix
LCS 6 std 34448	4,7,10	6.03		
08-145-01			5,54	
02			5,48	
03			5,57	
04			5,54	
05			5,80	
06			6,44	
08-179-01			5,54	
02			5,75	
03			5,53	
04			5,44	
05			5,58	
06			5,61	
07			5,55	
08			5,67	
DUP 08-145-03 ~~179-01~~ SUM 8/14/09			5,62	
LCS 9 33444		9,00		

SW846 9040C/9045D

SM 4500-H(+)-B

EPA 150.1

SOP K1501 Rev 11

Circle Instrument

(Orion 4-Star)

Orion 710A #1

Orion 710A #2

Sargent - Welch

Analyst: [signature] Date: 8/14/09/1315

DCN#80438

2.2.3 Method Flashpoint

2.2.3.1 Summary Data

LABORATORY REPORT

00083172

L09080145

08/19/09 09:25

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRR0758GR	L09080145-01	1010	1	07-AUG-09
PRR0859GR	L09080145-02	1010	1	07-AUG-09
PRR0731GR	L09080145-03	1010	1	07-AUG-09
PRR0906GR	L09080145-04	1010	1	07-AUG-09
PRR01096GR	L09080145-05	1010	1	07-AUG-09
PRR0701GR	L09080145-06	1010	1	07-AUG-09

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083173

Sample Number:	L09080145-01	PrePrep Method:	NONE	Instrument:	PRECISION
Client ID:	PRR0758GR	Prep Method:	1010	Prep Date:	08/17/2009 10:30
Matrix:	Soil	Analytical Method:	1010	Cal Date:	
Workgroup Number:	WG309849	Analyst:	JBK	Run Date:	08/17/2009 10:30
Collect Date:	08/06/2009 13:10	Dilution:	1	File ID:	PR09081808515101
		Units:	Degrees C		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		69.0	>		

> Result is greater than the associated numerical value.

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083174

Sample Number:	L09080145-02	PrePrep Method:	NONE	Instrument:	PRECISION
Client ID:	PRR0859GR	Prep Method:	1010	Prep Date:	08/17/2009 10:30
Matrix:	Soil	Analytical Method:	1010	Cal Date:	
Workgroup Number:	WG309849	Analyst:	JBK	Run Date:	08/17/2009 10:30
Collect Date:	08/06/2009 13:15	Dilution:	1	File ID:	PR09081808523301
		Units:	Degrees C		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		76.0	>		

> Result is greater than the associated numerical value.

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083175

Sample Number: **L09080145-03**
Client ID: **PRR0731GR**
Matrix: **Soil**
Workgroup Number: **WG309849**
Collect Date: **08/06/2009 13:20**

PrePrep Method: **NONE**
Prep Method: **1010**
Analytical Method: **1010**
Analyst: **JBK**
Dilution: **1**
Units: **Degrees C**

Instrument: **PRECISION**
Prep Date: **08/17/2009 10:30**
Cal Date:
Run Date: **08/17/2009 10:30**
File ID: **PR09081808525601**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		**72.0**	**>**		

> Result is greater than the associated numerical value.

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083176

Sample Number: **L09080145-04**
Client ID: **PRR0906GR**
Matrix: **Soil**
Workgroup Number: **WG309849**
Collect Date: **08/06/2009 13:25**

PrePrep Method: **NONE**
Prep Method: **1010**
Analytical Method: **1010**
Analyst: **JBK**
Dilution: **1**
Units: **Degrees C**

Instrument: **PRECISION**
Prep Date: **08/17/2009 10:30**
Cal Date:
Run Date: **08/17/2009 10:30**
File ID: **PR09081808532501**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		**74.0**	**>**		

> Result is greater than the associated numerical value.

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083177

Sample Number: **L09080145-05**
Client ID: **PRR01096GR**
Matrix: **Soil**
Workgroup Number: **WG309849**
Collect Date: **08/06/2009 13:30**

PrePrep Method: **NONE**
Prep Method: **1010**
Analytical Method: **1010**
Analyst: **JBK**
Dilution: **1**
Units: **Degrees C**

Instrument: **PRECISION**
Prep Date: **08/17/2009 10:30**
Cal Date:
Run Date: **08/17/2009 10:30**
File ID: **PR09081808541701**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		**68.0**	**>**		

> Result is greater than the associated numerical value.

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083178

Sample Number:	**L09080145-06**	PrePrep Method:	**NONE**	Instrument:	**PRECISION**
Client ID:	**PRR0701GR**	Prep Method:	**1010**	Prep Date:	**08/17/2009 10:30**
Matrix:	**Soil**	Analytical Method:	**1010**	Cal Date:	
Workgroup Number:	**WG309849**	Analyst:	**JBK**	Run Date:	**08/17/2009 10:30**
Collect Date:	**08/06/2009 13:35**	Dilution:	**1**	File ID:	**PR09081808543801**
		Units:	**Degrees C**		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		**70.0**	**>**		

> Result is greater than the associated numerical value.

2.2.3.2 QC Summary Data

1.0 Calculating the flashpoint of a sample.

$$Flashpoint = C + 0.033(760 - P)$$

Where:
C = Observed flashpoint (Celcius)
P = Ambient barometric pressure(mmHg) corrected for temperature and gravity.

Flashpoint = Flashpoint of the sample.

2.2.3.3 Raw Data

2.2.4 Reactive Cyanide Data

2.2.4.1 Summary Data

LABORATORY REPORT

00083184

L09080145

08/19/09 09:25

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRR0758GR	L09080145-01	SW7.33	1	07-AUG-09
PRR0859GR	L09080145-02	SW7.33	1	07-AUG-09
PRR0731GR	L09080145-03	SW7.33	1	07-AUG-09
PRR0906GR	L09080145-04	SW7.33	1	07-AUG-09
PRR01096GR	L09080145-05	SW7.33	1	07-AUG-09
PRR0701GR	L09080145-06	SW7.33	1	07-AUG-09

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083185

Sample Number: **L09080145-01**
Client ID: **PRR0758GR**
Matrix: **Soil**
Workgroup Number: **WG309684**
Collect Date: **08/06/2009 13:10**

PrePrep Method: **NONE**
Prep Method: **SW7.33**
Analytical Method: **SW7.33**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **UV-120-1V**
Prep Date: **08/14/2009 08:30**
Cal Date:
Run Date: **08/14/2009 08:30**
File ID: **1V.0908140830-03**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	49.9	24.9

U Not detected at or above adjusted sample detection limit

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083186

Sample Number: **L09080145-02**
Client ID: **PRR0859GR**
Matrix: **Soil**
Workgroup Number: **WG309684**
Collect Date: **08/06/2009 13:15**

PrePrep Method: **NONE**
Prep Method: **SW7.33**
Analytical Method: **SW7.33**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **UV-120-1V**
Prep Date: **08/14/2009 08:30**
Cal Date:
Run Date: **08/14/2009 08:30**
File ID: **1V.0908140830-04**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	49.9	24.9

U Not detected at or above adjusted sample detection limit

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083187

Sample Number:	L09080145-03	PrePrep Method:	NONE	Instrument:	UV-120-1V
Client ID:	PRR0731GR	Prep Method:	SW7.33	Prep Date:	08/14/2009 08:30
Matrix:	Soil	Analytical Method:	SW7.33	Cal Date:	
Workgroup Number:	WG309684	Analyst:	DLP	Run Date:	08/14/2009 08:30
Collect Date:	08/06/2009 13:20	Dilution:	1	File ID:	1V.0908140830-05
		Units:	mg/kg		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	49.9	24.9

U Not detected at or above adjusted sample detection limit

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083188

Sample Number: **L09080145-04**
Client ID: **PRR0906GR**
Matrix: **Soil**
Workgroup Number: **WG309684**
Collect Date: **08/06/2009 13:25**

PrePrep Method: **NONE**
Prep Method: **SW7.33**
Analytical Method: **SW7.33**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **UV-120-1V**
Prep Date: **08/14/2009 08:30**
Cal Date:
Run Date: **08/14/2009 08:30**
File ID: **1V.0908140830-06**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	49.8	24.9

U Not detected at or above adjusted sample detection limit

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083189

Sample Number: **L09080145-05**
Client ID: **PRR01096GR**
Matrix: **Soil**
Workgroup Number: **WG309684**
Collect Date: **08/06/2009 13:30**

PrePrep Method: **NONE**
Prep Method: **SW7.33**
Analytical Method: **SW7.33**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **UV-120-1V**
Prep Date: **08/14/2009 08:30**
Cal Date:
Run Date: **08/14/2009 08:30**
File ID: **1V.0908140830-07**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	49.8	24.9

U Not detected at or above adjusted sample detection limit

Report Number: **L09080145**
Report Date : **August 19, 2009**

00083190

Sample Number: **L09080145-06**
Client ID: **PRR0701GR**
Matrix: **Soil**
Workgroup Number: **WG309684**
Collect Date: **08/06/2009 13:35**

PrePrep Method: **NONE**
Prep Method: **SW7.33**
Analytical Method: **SW7.33**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **UV-120-1V**
Prep Date: **08/14/2009 08:30**
Cal Date:
Run Date: **08/14/2009 08:30**
File ID: **1V.0908140830-08**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Cyanide	57-12-5		U	49.8	24.9

U Not detected at or above adjusted sample detection limit

2.2.4.2 QC Summary Data

Microbac Laboratories Inc.

Data Checklist

Date: 14-AUG-2009
Analyst: DLP
Analyst: NA
Method: REACTC
Instrument: UV-120-1V
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG309684

Calibration/Linearity	07-16-09
Second Source Check	
ICV/CCV (std)	X
ICB/CCB	
Blank	
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	DLP
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
17-AUG-2009

Secondary Reviewer:
18-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-18-2009 14:42:44

2.2.4.3 Raw Data

00083194

WG307248

Curves

Parameter: REACT-CN

Spectrophotometer: UV-120-1V

Calibration (Curve) standard stock: Std 33348

Concentration: 968 mg/L

Recipe for preparation of curve standards found in:
SOP: K7332 Revision: 8 Page: 8

Second Source Stock: Std 33349 (concentration: 1020 mg/L

Daily Preparation: 5(1020)/250 = 20.4
(10)20.4)/100 = 2.04
concentration = 5(2.04)/50 = 0.204

Calibration Standards (mg/L)	Volume	Cell Size	Wavelength	Absorbance
0.00	50	1	578	0.000
0.01936	↓	↓	↓	0.027
0.03872				0.053
0.0968				0.138
0.1936				0.284
0.2904				0.414
0.3872				0.557
2nd 0.204	↓	↓	↓	0.298

Analyst: [signature]

Date/Time: 7/16/09 @1040

DCN#80111

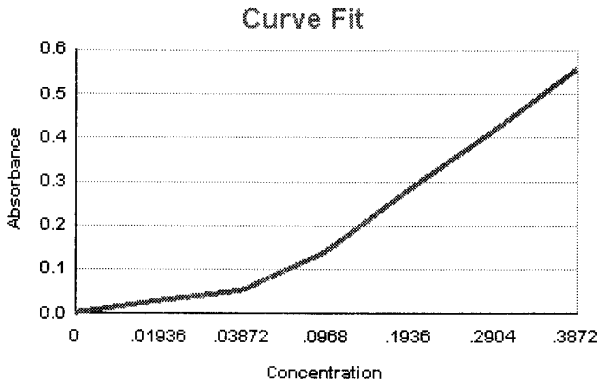
Microbac Laboratories Inc.
INITIAL CALIBRATION

Workgroup:WG307248
Analytical Method:846
Instrument ID:UV-120-1V

Analyst:JBK
Initial Calibration Date:07/16/2009

Analyte: CYANIDE
Number of Points: 7
Slope: 1.43990
Y-Intercept: -0.000635703
Coef. Of Correlation (R^2): 0.999810
Coef. Of Correlation (R): 0.999905

Concentration X	Absorbance Y	X^2	X * Y	Y-Fitted (mX^2+B)
0.00	0.00	0.00	0.00	-0.000635703
0.0194	0.0270	0.000375	0.000523	0.0272407
0.0387	0.0530	0.00150	0.00205	0.0551171
0.0968	0.138	0.00937	0.0134	0.138746
0.194	0.284	0.0375	0.0550	0.278128
0.290	0.414	0.0843	0.120	0.417511
0.387	0.557	0.150	0.216	0.556893



WG_ICAL_CAL_WET - Modified 03/06/2008
Report generated 07/16/2009 11:18

Microbac Laboratories Inc.
ALTERNATE SOURCE REPORT

Workgroup #: WG307248
File ID: 1V.0907161040-08
CCV ID: WG307248-08
Units: mg/kg
Analyte: CYANIDE

Instrument ID: UV-120-1V
Run Date: 07/16/2009
Run Time: 10:40
Analyst: JBK
Cal ID: UV-120 -

Analyte	Expected	Found	RF	%D	Q
Reactivity, Cyanide	.204	0.207	1.46	1.5	

* Exceeds %D Limit

CCC Calibrtion Check Compounds
SPCC System Performance Check Compounds

WET_WG_SSCV - Modified 03/06/2008
Report generated 07/16/2009 11:19

Reactive Cyanide

LCS: Std 34091 (1020)
CCV: Std 34090 (968) SOP: K7332 Revision # 8

Daily Dilution: 5(968)/250=19.36 Curve ID: 307248 7-16-09
10(19.36)/100=1.936 Spec: UV1201V
5(1.936)/50=0.1936

Sample	Grams Reacted	Dilution	Cell Size	Aborbance @ 578nm
CCV: 0.1936	NA		1cm	0.276
LCS:	10.00			0.339
08-145-01	10.025			0.000
02	10.022			0.000
03	10.025			0.000
04	10.045			0.000
05	10.039			0.000
06	10.035			0.000
08-179-01	10.038			0.000
02	10.011			0.000
03	10.055			0.000
-04	10.~~2574~~ DWS-14-09			0.000
-05	10.022			0.000
-06	10.014			0.000
-07	10.011			0.000
-08	10.031			0.000
DUP: 08-179-07	10.007		1cm	0.000

Analyst: Quentin Kluge Date/Time: 08-14-09/0830

DCN#80427

Microbac Laboratories Inc.
SAMPLE REPORT

Workgroup: WG309684
Analyte: CYANIDE

Analyst: DLP
Date: 08/14/2009

Sample ID	I Vol	F Vol	Response	Scrubber		Slope	Y Intercept	Dil	Anal. Conc.	Rep. Conc.	Units
WG309684-01	10	50	0.339	50	250	1.440	-0.0006357	5	1.1794	29.484	mg/kg
L09080145-01	10.025	50	0	50	250	1.440	-0.0006357	1	0.011010	ND	mg/kg
L09080145-02	10.022	50	0	50	250	1.440	-0.0006357	1	0.011013	ND	mg/kg
L09080145-03	10.025	50	0	50	250	1.440	-0.0006357	1	0.011010	ND	mg/kg
L09080145-04	10.045	50	0	50	250	1.440	-0.0006357	1	0.010988	ND	mg/kg
L09080145-05	10.039	50	0	50	250	1.440	-0.0006357	1	0.010994	ND	mg/kg
L09080145-06	10.035	50	0	50	250	1.440	-0.0006357	1	0.010999	ND	mg/kg
L09080179-01	10.038	50	0	50	250	1.440	-0.0006357	1	0.010996	ND	mg/kg
L09080179-02	10.011	50	0	50	250	1.440	-0.0006357	1	0.011025	ND	mg/kg
L09080179-03	10.055	50	0	50	250	1.440	-0.0006357	1	0.010977	ND	mg/kg
L09080179-04	10.014	50	0	50	250	1.440	-0.0006357	1	0.011022	ND	mg/kg
L09080179-05	10.022	50	0	50	250	1.440	-0.0006357	1	0.011013	ND	mg/kg
L09080179-06	10.014	50	0	50	250	1.440	-0.0006357	1	0.011022	ND	mg/kg
L09080179-07	10.011	50	0	50	250	1.440	-0.0006357	1	0.011025	ND	mg/kg
WG309684-02	10.011	50	0	50	250	1.440	-0.0006357	1	0.011025	0.055065	mg/kg
L09080179-08	10.031	50	0	50	250	1.440	-0.0006357	1	0.011003	ND	mg/kg
WG309684-03	10.007	50	0	50	250	1.440	-0.0006357	1	0.011030	0.055109	mg/kg

UV_REACTC - Modified 03/06/2008
Report generated 08/17/2009 14:05

Microbac

Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

Workgroup #: WG309857
File ID: 1V.0908140830-01
CCV ID: WG309857-01
Units: mg/kg
Analyte: CYANIDE

Instrument ID: UV-120-1V
Run Date: 08/14/2009
Run Time: 08:30
Analyst: DLP
Cal ID: UV-120 -

Analyte	Expected	Found	RF	%D	Q
Reactivity, Cyanide	.194	0.192	1.43	1.0	

* Exceeds %D Limit

CCC Calibrtion Check Compounds
SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 08/17/2009 13:58

3.0 Attachments

Microbac Laboratories Inc.
Analyst Listing
August 19, 2009

ADC – ANTHONY D. CANTER	AJF – AMANDA J. FICKIESEN	AJM – ANTHONY J. MOSSBURG
ALB – ANNIE L. BROWN	AML – ANTHONY M. LONG	BLG – BRENDA L. GREENWALT
BRG – BRENDA R. GREGORY	CAA – CASSIE A. AUGENSTEIN	CAF – CHERYL A. FLOWERS
CAH – CHARLES A. HALL	CEB – CHAD E. BARNES	CLC – CHRYS L. CRAWFORD
CLW – CHARISSA L. WINTERS	CPD – CHAD P. DAVIS	CSH – CHRIS S. HILL
DDE – DEBRA D. ELLIOTT	DEL – DON E. LIGHTFRITZ	DEV – DAVID E. VANDENBERG
DGB – DOUGLAS G. BUTCHER	DIH – DEANNA I. HESSON	DLB – DAVID L. BUMGARNER
DLP – DOROTHY L. PAYNE	DLR – DIANNA L. RAUCH	DR – DEANNA ROBERTS
ECL – ERIC C. LAWSON	EDA – ERIN D. AGEE	ERP – ERIN R. PORTER
FJB – FRANCES J. BOLDEN	HAV – HEMA VILASAGAR	HJR – HOLLY J. REED
JBK – JEREMY B. KINNEY	JDH – JUSTIN D. HESSON	JKT – JANE K. THOMPSON
JWR – JOHN W. RICHARDS	JWS – JACK W. SHEAVES	JYH – JI Y. HU
KEB – KATHRYN E. BARNES	KHR – KIM H. RHODES	KRA – KATHY R. ALBERTSON
LKN – LINDA K. NEDEFF	LSB – LESLIE S. BUCINA	MDA – MIKE D. ALBERTSON
MDC – MICHAEL D. COCHRAN	MES – MARY E. SCHILLING	MMB – MAREN M. BEERY
MRT – MICHELLE R. TAYLOR	MSW – MATT S. WILSON	NPM – NATHANIEL P. MILLER
PDM – PIERCE D. MORRIS	RAH – ROY A. HALSTEAD	RB – ROBERT BUCHANAN
REK – ROBERT E. KYER	RLK – ROBIN L. KLINGER	RWC – RODNEY W. CAMPBELL
SDH – SHANA D. HINYARD	SLM – STEPHANIE L. MOSSBURG	SLP – SHERI L. PFALZGRAF
TIP – TAE I. PARRISH	TMB – TIFFANY M. BAILEY	TMM – TAMMY M. MORRIS
VC – VICKI COLLIER	WTD – WADE T. DELONG	

Qualkey: STD_ND=U

Qualifier	Description
U	Not detected at or above adjusted sample detection limit

*****Special Notes for Organic Analytes**

1. Acrolein and acrylonitrile by method 624 are semi-quantitative screens only.
2. 1,2-Diphenylhydrazine is unstable and is reported as azobenzene.
3. N-nitrosodiphenylamine cannot be separated from diphenylamine.
4. 3-Methylphenol and 4-Methylphenol are unresolvable compounds.
5. m-Xylene and p-Xylene are unresolvable compounds.
6. The reporting limits for Appendix II/IX compounds by method 8270 are based on EPA estimated PQLs referenced in 40 CFR Part 264, Appendix IX. They are not always achievable for every compound an are matrix dependent.

COC NO. (DATE-01)

Shaw Environmental & Infrastructure, Inc.
3010 Briarpark Drive, Suite 400
Houston, TX 77042
(713) 996-4400

Laboratory Name: Microbac
Address : 158 Starlite Drive, Marietta OH 45750
Contact : Stephanie Mossburg
Phone: 1-800-373-4071

PM: Praveen Svrivastav (713.996.4588) TAT:
Project Contact: Jennifer Hoang Phone No: 713-996-4408
Project Name: Pistol Range Site: Confirmation Sampling
Project #: 117591-0009B340 Location: Karnack, TX

Sampler Print: ALLEN WILLMORE (713) 247-9292
Sampler Sign: M. Willmore

Sample Number	Grab	Date	Time	Matrix	# of Containers	TCLP VOCs (8260)	TCLP SVOCs (8270) RCRA Metals	**RCI							Comments
PRRO758GR	X	8/6/09	13:10	Soil	3	X	X	X							HOLD
PRRO859GR	X	8/6/09	13:15	Soil	3	X	X	X							HOLD
PRRO731GR	X	8/6/09	13:20	Soil	3	X	X	X							HOLD
PRRO906GR	X	8/6/09	13:25	Soil	3	X	X	X							HOLD
PRRO1096GR	X	8/6/09	13:30	Soil	3	X	X	X							HOLD
PRRO701GR	X	8/6/09	13:35	Soil	3	X	X	X							HOLD
PRDSO1	X	8/6/09	13:45	Soil	3	X	X	X							24-HOUR TAT (Rolloffs B758, B859, B731, B906, B1096, B701)
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											
	X			Soil											

**RCI
Reactivity Cyanide-SW7.33
Reactivity Sulfide-SW7.34
Corrosivity pH-9045D
Ignitability-1010

Relinquished By: M. Willmore Date/Time 8/6/09 17:30
Received By: Date/Time

Special Instructions PRDSO1 is 24-HOUR TAT !! HOLD OTHER SAMPLES PENDING RESULTS FROM PRDSO1 !!

Relinquished By: Date/Time
Received for Laboratory By: Date/Time

Microbac OVD 221000000959
Received: 08/07/2009 10:12
By: ERIN PORTER
Erin Porter

Page 177

00083203

COOLER INSPECTION

Received: 08/07/2009 10:12
Delivery Method: UPS
Opened By: Erin R Porter
Comments:

Login(s): L09080144 L09080145

Cooler(s)

Cooler #	Temp Gun	Temp	Tracking #	COC #	Comments
0013156	H	2.0	1Z66V7250195297569		

1	Yes	Were shipping coolers sealed?
2	Yes	Were custody seals intact?
3	Yes	Were cooler temperatures in range of 0-6?
4	Yes	Was ice present?
5	Yes	Were COC's received/information complete/signed and dated?
6	Yes	Were sample containers and labels intact and match COC?
7	Yes	Were the correct containers and volumes received?
8	NA	Were correct perservatives used? (water only)
9	NA	Were pH ranges acceptable? (voa's excluded)
10	NA	Were VOA samples free of headspace (<6mm)?
11	Yes	Were samples received within EPA hold times?

Microbac - Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750
Tel: (740)373-4071 Fax: (740)373-4835

Internal Chain of Custody Report

Login: L09080145
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 18-AUG-2009

Samplenum	Container ID	Products
L09080145-01	604166	

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	
2	ANALYZ	W1	WET	14-AUG-2009 08:21	DLP	JKT

Comments:Products cancelled.

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Samplenum	Container ID	Products
L09080145-01	605953	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		14-AUG-2009 08:27	JKT	

Samplenum	Container ID	Products
L09080145-01	605954	REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	14-AUG-2009 08:27	JKT	
2	ANALYZ	W1	WET	14-AUG-2009 09:26	DLP	RLK
3	STORE	WET	A1	19-AUG-2009 08:19	JKT	JBK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L09080145
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 18-AUG-2009

Samplenum	Container ID	Products
L09080145-02	604167	

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	
2	ANALYZ	W1	WET	14-AUG-2009 08:21	DLP	JKT

Comments:Products cancelled.

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Samplenum	Container ID	Products
L09080145-02	605955	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		14-AUG-2009 08:27	JKT	

Samplenum	Container ID	Products
L09080145-02	605956	REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	14-AUG-2009 08:27	JKT	
2	ANALYZ	W1	WET	14-AUG-2009 09:26	DLP	RLK
3	STORE	WET	A1	19-AUG-2009 08:19	JKT	JBK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L09080145
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 18-AUG-2009

Samplenum	Container ID	Products
L09080145-03	604168	

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	
2	ANALYZ	W1	WET	14-AUG-2009 08:21	DLP	JKT

Comments:Products cancelled.

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Samplenum	Container ID	Products
L09080145-03	605957	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		14-AUG-2009 08:27	JKT	

Samplenum	Container ID	Products
L09080145-03	605958	REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	14-AUG-2009 08:27	JKT	
2	ANALYZ	W1	WET	14-AUG-2009 09:26	DLP	RLK
3	STORE	WET	A1	19-AUG-2009 08:19	JKT	JBK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L09080145
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 18-AUG-2009

Samplenum	Container ID	Products
L09080145-04	604169	

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	
2	ANALYZ	W1	WET	14-AUG-2009 08:21	DLP	JKT

Comments:Products cancelled.

3	STORE	WET	A1	19-AUG-2009 08:19	JKT	JBK

Comments:Products cancelled.

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Samplenum	Container ID	Products
L09080145-04	605959	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		14-AUG-2009 08:27	JKT	

Samplenum	Container ID	Products
L09080145-04	605960	REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	14-AUG-2009 08:27	JKT	
2	ANALYZ	W1	WET	14-AUG-2009 09:26	DLP	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L09080145
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 18-AUG-2009

Samplenum	Container ID	Products
L09080145-05	604170	

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	
2	ANALYZ	W1	WET	14-AUG-2009 08:21	DLP	JKT

Comments:Products cancelled.

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Samplenum	Container ID	Products
L09080145-05	605961	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		14-AUG-2009 08:27	JKT	

Samplenum	Container ID	Products
L09080145-05	605962	REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	14-AUG-2009 08:27	JKT	
2	ANALYZ	W1	WET	14-AUG-2009 09:26	DLP	RLK
3	STORE	WET	A1	19-AUG-2009 08:19	JKT	JBK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

Internal Chain of Custody Report

Login: L09080145
Account: 2773
Project: 2773.025
Samples: 6
Due Date: 18-AUG-2009

Samplenum	Container ID	Products
L09080145-06	604171	

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	
2	ANALYZ	W1	WET	14-AUG-2009 08:21	DLP	JKT

Comments:Products cancelled.

3	STORE	WET	A1	19-AUG-2009 08:20	JKT	JBK

Comments:Products cancelled.

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	07-AUG-2009 12:03	ERE	

Samplenum	Container ID	Products
L09080145-06	605963	TC-EX

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER		14-AUG-2009 08:27	JKT	

Samplenum	Container ID	Products
L09080145-06	605964	REACTC REACTS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish
1	LOGIN	COOLER	W1	14-AUG-2009 08:27	JKT	
2	ANALYZ	W1	WET	14-AUG-2009 09:26	DLP	RLK

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login

158 Starlite Drive, Marietta, OH 45750 • T:740-373-4071 • F:740-373-4835 • http://www.microbac.com

Laboratory Report Number: L09080178

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories.

Review and compilation of your report was completed by Microbac's Sales and Service Team. If you have questions, comments or require further assistance regarding this report, please contact your team member noted in the reviewed box below at 800-373-4071. Team member e-mail addresses also appear here for your convenience.

Kathy Albertson	*Team Chemist/Data Specialist*	kalbertson@microbac.com
Stephanie Mossburg	*Team Chemist/Data Specialist*	smossburg@microbac.com
Tony Long	*Team Chemist/Data Specialist*	tlong@microbac.com
Amanda Fickiesen	*Client Services Specialist*	afickiesen@microbac.com
Annie Brown	*Client Services Specialist*	abrown@microbac.com

This report was reviewed on August 12, 2009.

Stephanie Mossburg - Team Chemist/Data Specialist

I certify that all test results meet all of the requirements of the accrediting authority listed below. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories.

This report was certified on August 12, 2009.

David Vandenberg - Managing Director

State of origin: Texas
Accrediting authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: Microbac OVD
This report contains a total of 195 pages.

Look closer. Go further. Do more.

Microbac

Microbac Laboratories, Inc.
Ohio Valley Division
158 Starlite Drive
Marietta, OH 45750

Phone: 800.373.4071
Fax: 740.373.4835

Your data is now available online via our Web Access Portal!

Access and print reports, check the status of your projects, and review electronic data forms online from anywhere with internet access!

View a demo by visiting www.microbac.com and entering the Ohio Valley location
Click on "Online Data Access"
User ID: jdoe@abc.com
Password: demo

Contact your Microbac service representative to set up a *FREE* account today!

LOOK CLOSER, GO FURTHER, DO MORE.

Microbac REPORT L09080178
PREPARED FOR Shaw E I, Inc.
WORK ID:

1.0 Introduction

Microbac Laboratories Inc.
REPORT NARRATIVE

Microbac Login No: L09080178

CHAIN OF CUSTODY: The chain of custody number was 080709-01

SHIPMENT CONDITIONS: The chain of custody forms were received sealed in a cooler. The cooler temperature was 3 degrees C.

SAMPLE MANAGEMENT: All samples received were intact.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Approved: 11-AUG-09
Stephanie Mossburg

Laboratory Data Package Cover Page

00083216

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

MAREN M. BEERY	Maren Beery	Metals Supervisor	August 12, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080178
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309423
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <RL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?		✓			ER1
Were MS/MSD analyzed at the appropriate frequency?		✓			ER1
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		✓			ER1

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?		✓			ER1
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <RL?	✓				
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	✓				
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080178
Project Name:	798-LONGHORN
Method:	7471
Prep Batch Number(s):	WG309423
Reviewer Name:	MAREN M. BEERY
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER#1 -The MS/MSD samples associated with this batch were not spiked during the digestion procedure. The LCS and post digestion spike yielded compliant recoveries to assess matrix and digestion efficiencies.
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00083221

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080178
Project Name:	798-LONGHORN
Method:	PH
Prep Batch Number(s):	WG309380
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ED(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080178
Project Name:	798-LONGHORN
Method:	PH
Prep Batch Number(s):	WG309380
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00083226

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080178
Project Name:	798-LONGHORN
Method:	FLASHPOINT
Prep Batch Number(s):	WG309412
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080178
Project Name:	798-LONGHORN
Method:	FLASHPOINT
Prep Batch Number(s):	WG309412
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00083231

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080178
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309353
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?			✓		
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?			✓		
Were sample quantitation limits reported for all analytes not detected?			✓		
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?			✓		
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?			✓		
Were LCSs analyzed at the required frequency?			✓		
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?			✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?			✓		
Were all points generated between the lowest and highest standard used to calculate the curve?			✓		
Are ICAL data available for all instruments used?			✓		
Has the initial calibration curve been verified using an appropriate second source standard?			✓		
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?			✓		
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?			✓		
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ED(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?			✓		
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?			✓		
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080178
Project Name:	798-LONGHORN
Method:	PCTSOLIDS
Prep Batch Number(s):	WG309353
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00083236

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

R1 Field chain-of-custody documentation;

R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10

b) dilution factors,

c) preparation methods,

d) Cleanup methods, and

e) If required for the project, tentatively identified compounds (TICs)

R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and

b) The laboratory's surrogate QC limits.

R5 Test reports/summary forms for blank samples;

R6 Test reports/summary forms FOR laboratory control samples (LCSs) including:

a) LCS spiking amount,

b) Calculated %R for each analyte, and

c) The laboratory"s LCS QC limits.

R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,

b) MS/MSD spiking amounts,

c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d) Calculated %R and relative percent differences (RPDs), and

e) The laboratory's MS/MSD QC limits

R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,

b) the calculated RPD, and

c) the laboratory's QC limits for anlytical duplicates.

R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

R10 Other problems or anomalies.

The exception Report for every "No" or "Not Reviewed (NR)" item in laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, If applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is trus.

DEANNA I. HESSON	Deanna Hesson	Conventional Lab Supervisor	August 11, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080178
Project Name:	798-LONGHORN
Method:	REACTIVITY
Prep Batch Number(s):	WG309302, WG309303
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?			✓		
Were % moisture (or solids) reported for all soil and sediment samples?			✓		
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?			✓		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			✓		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?			✓		
Were blanks analyzed at the appropriate frequency?			✓		
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?			✓		
Were blank concentrations <MQL?			✓		
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?			✓		
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓		✓		
Was the LCSD RPD within QC limits?			✓		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	✓				
Were analytical duplicates analyzed at the appropriate frequency?	✓				
Were RPDs or relative standard deviations within the laboratory QC limits?	✓				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?			✓		
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?			✓		
Are unadjusted MQLs included in the laboratory data package?			✓		
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?			✓		
Were response factors and/or relative response factors for each analyte within QC limits?			✓		
Were percent RSDs or correlation coefficient criteria met?			✓		
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?			✓		
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?			✓		
Were ion abundance data within the method-required QC limits?			✓		
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?			✓		
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?			✓		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?			✓		
Is the MDL either adjusted or supported by the analysis of DCSs?			✓		
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080178
Project Name:	798-LONGHORN
Method:	REACTIVITY
Prep Batch Number(s):	WG309302, WG309303
Reviewer Name:	DEANNA I. HESSON
LRC Date:	August 11, 2009

EXCEPTIONS REPORT
ER# - Description
Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

Laboratory Data Package Cover Page

00083241

This data Package consists of:

This signature page, the laboratory review checklists, and the following reportable data:

✓R1 Field chain-of-custody documentation;

✓R2 sample identification cross-reference;

R3 Test reports (analytical data sheets) for each enviornmental sample that includes:

a) Items consistant with NELAC 5.13 or ISO/IEC 17025 Section 5.10
b) dilution factors,
c) preparation methods,
d) Cleanup methods, and
e) If required for the project, tentatively identified compounds (TICs)

✓R4 Surrogate recovery data including:

a) Calculated recovery (%R) for each analyte, and
b) The laboratory's surrogate QC limits.

✓R5 Test reports/summary forms for blank samples;

✓R6 Test reports/summary forms for laboratory control samples (LCSs) including:

a) LCS spiking amount,
b) Calculated %R for each analyte, and
c) The laboratory"s LCS QC limits.

✓R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a) Samples associated with the MS/MSD clearly identified,
b) MS/MSD spiking amounts,
c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
d) Calculated %R and relative percent differences (RPDs), and
e) The laboratory's MS/MSD QC limits

✓R8 Laboratory analytical duplicate (if applicable) revocery and precision:

a) the amount of analyte measured in the duplicate,
b) the calculated RPD, and
c) the laboratory's QC limits for anlytical duplicates.

✓R9 List of method quantitation limits (MQLs) for each analyte for each method and matrix;

✓R10 Other problems or anomalies.

✓The exception Report for every "No" or "Not Reviewed (NR)" item IN laboratory review checklist.

Release statement: I am responsible for the release of this laboratory data package. This data package has been reviewed by the laboratory and is complete and technically compliant with the requirements of the methods used, except where noted by the laboratory in the attached exceptions reports. By my signature below, I affirm to the best of my knowledge, all problems/anomalies, observed by the laboratory as having the potential to affect the quality of the data, have been identified by the laboratoy in the Laboratory Review Checklist, and no information or data have been knowingly withheld that would affect the quality of the data.

Check, if applicable: [] This laboratory is an in-house laboratory controlled by the person repsonding to rule. The official signing the cover page of the rule-required report (for example, the APAR) in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

MIKE D. ALBERTSON		Volatiles Lab Supervisor	August 12, 2009
Name (Printed)	Signature	Official Title (printed)	DATE

RG-366/TRRP-13 December 2002 A1

Microbac Laboratories Inc.
Laboratory Review Checklist

Laboratory Name:	Microbac Laboratories Inc.
Laboratory Log Number:	L09080178
Project Name:	798-LONGHORN
Method:	8260B
Prep Batch Number(s):	309394
Reviewer Name:	MIKE D. ALBERTSON
LRC Date:	August 12, 2009

Description	Yes	No	NA(1)	NR(2)	ER(3)
Chain-Of-Custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	✓				
Were all departures from standard conditions described in an exception report?	✓				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	✓				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	✓				
Test reports					
Were all samples prepared and analyzed within holding times?	✓				
Other than those results <MQL, were all other raw values bracketed by calibration standards?	✓				
Were calculations checked by a peer or supervisor?	✓				
Were all analyte identifications checked by a peer or supervisor?	✓				
Were sample quantitation limits reported for all analytes not detected?	✓				
Were all results for soil and sediment samples reported on a dry weight basis?	✓				
Were % moisture (or solids) reported for all soil and sediment samples?	✓				
If required for the project, TICs reported?			✓		
Surrogate recovery data					
Were surrogates added prior to extraction?	✓				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	✓				
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	✓				
Were blanks analyzed at the appropriate frequency?	✓				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	✓				
Were blank concentrations <MQL?	✓				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	✓				
Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	✓				
Were LCSs analyzed at the required frequency?	✓				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	✓				
Does the detectability data document the laboratorys capability to detect the COCs at the MDL used to calculate the SQLs?	✓				
Was the LCSD RPD within QC limits?	✓				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			✓		
Were MS/MSD analyzed at the appropriate frequency?			✓		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			✓		

Description	Yes	No	NA(1)	NR(2)	ER(3)
Were MS/MSD RPDs within laboratory QC limits?			✓		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			✓		
Were analytical duplicates analyzed at the appropriate frequency?			✓		
Were RPDs or relative standard deviations within the laboratory QC limits?			✓		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	✓				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	✓				
Are unadjusted MQLs included in the laboratory data package?	✓				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	✓				
Were all necessary corrective actions performed for the reported data?	✓				
Was applicable and available technology used to lower the SQL minimize the matrix interference affects on the sample results?	✓				
ICAL					
Were response factors and/or relative response factors for each analyte within QC limits?	✓				
Were percent RSDs or correlation coefficient criteria met?	✓				
Was the number of standards recommended in the method used for all analytes?	✓				
Were all points generated between the lowest and highest standard used to calculate the curve?	✓				
Are ICAL data available for all instruments used?	✓				
Has the initial calibration curve been verified using an appropriate second source standard?	✓				
Initial and continuing calibration verification (ICV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	✓				
Were percent differences for each analyte within the method-required QC limits?	✓				
Was the ICAL curve verified for each analyte?	✓				
Was the absolute value of the analyte concentration in the inorganic CCB <MDL?			✓		
Mass spectral tuning:					
Was the appropriate compound for the method used for tuning?	✓				
Were ion abundance data within the method-required QC limits?	✓				
Internal standards (IS):					
Were IS area counts and retention times within the method-required QC limits?	✓				
Raw data (NELAC section 1 appendix A glossary, and section 5.12 or ISO/IEC 17025 section 4.12.2)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	✓				
Were data associated with manual integrations flagged on the raw data?	✓				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			✓		
Tentatively identified compounds (TICs):					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			✓		
Interference Check Sample (ICS) results:					
Were percent recoveries within method QC limits?			✓		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			✓		
Method detection limit (MDL) studies					
Was a MDL study performed for each reported analyte?	✓				
Is the MDL either adjusted or supported by the analysis of DCSs?	✓				
Proficiency test reports:					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	✓				

Description	Yes	No	NA(1)	NR(2)	ER(3)
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	✓				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	✓				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5C or ISO/IEC 4?	✓				
Is documentation of the analyst's competency up-to-date and on file?	✓				
Verification/validation documentation for methods (NELAC Chap 5 or ISO/IEC 17025 Section 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	✓				
Laboratory standard operating procedures (SOPs):					
Are laboratory SOPs current and on file for each method performed?	✓				

EXCEPTIONS REPORT
ER# - Description
There were no exceptions.

Footnotes:
(1) NA = Not applicable to method or project
(2) NR = Not reviewed
(3) ER# = Exception report number

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

LABORATORY REPORT

00083248

L09080178

08/12/09 14:33

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS02	L09080178-01	8260B	10	08-AUG-09
PRDS03	L09080178-02	8260B	10	08-AUG-09

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083249

Sample Number: **L09080178-01**
Client ID: **PRDS02**
Matrix: **Leachate**
Workgroup Number: **WG309394**
Collect Date: **08/07/2009 14:15**
Sample Tag: **DL01**

PrePrep Method: **1311**
Prep Method: **5030C**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **10**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **08/11/2009 11:41**
Cal Date: **06/26/2009 14:39**
Run Date: **08/11/2009 11:41**
File ID: **6M85220**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Benzene	71-43-2		U	50	1.25	D018	500
Carbon tetrachloride	56-23-5		U	50	2.5	D019	500
Chlorobenzene	108-90-7		U	50	1.25	D021	100000
Chloroform	67-66-3		U	50	1.25	D022	6000
1,2-Dichloroethane	107-06-2		U	50	2.5	D028	500
1,1-Dichloroethene	75-35-4		U	50	5	D029	700
Methyl Ethyl Ketone	78-93-3		U	100	25	D035	200000
Tetrachloroethene	127-18-4		U	50	2.5	D039	700
Trichloroethene	79-01-6		U	50	2.5	D040	500
Vinyl chloride	75-01-4		U	100	2.5	D043	200

Surrogate	% Recovery	Lower	Upper
Dibromofluoromethane	109	86	118
1,2-Dichloroethane-d4	93.9	80	120
Toluene-d8	101	88	110
4-Bromofluorobenzene	97.2	86	115

U Not detected at or above adjusted sample detection limit

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083250

Sample Number: **L09080178-02**
Client ID: **PRDS03**
Matrix: **Leachate**
Workgroup Number: **WG309394**
Collect Date: **08/07/2009 14:30**
Sample Tag: **DL01**

PrePrep Method: **1311**
Prep Method: **5030C**
Analytical Method: **8260B**
Analyst: **MES**
Dilution: **10**
Units: **ug/L**

Instrument: **HPMS6**
Prep Date: **08/11/2009 12:13**
Cal Date: **06/26/2009 14:39**
Run Date: **08/11/2009 12:13**
File ID: **6M85221**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Benzene	71-43-2		U	50	1.25	D018	500
Carbon tetrachloride	56-23-5		U	50	2.5	D019	500
Chlorobenzene	108-90-7		U	50	1.25	D021	100000
Chloroform	67-66-3		U	50	1.25	D022	6000
1,2-Dichloroethane	107-06-2		U	50	2.5	D028	500
1,1-Dichloroethene	75-35-4		U	50	5	D029	700
Methyl Ethyl Ketone	78-93-3		U	100	25	D035	200000
Tetrachloroethene	127-18-4		U	50	2.5	D039	700
Trichloroethene	79-01-6		U	50	2.5	D040	500
Vinyl chloride	75-01-4		U	100	2.5	D043	200

Surrogate	% Recovery	Lower	Upper
Dibromofluoromethane	110	86	118
1,2-Dichloroethane-d4	96.3	80	120
Toluene-d8	103	88	110
4-Bromofluorobenzene	98.7	86	115

U Not detected at or above adjusted sample detection limit

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

RF = [(Ax) (Cis)] / [(Ais) (Cx)]

where:	Example
Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	**1.0039**

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Vs = Purge volume of sample (mL)	**10**
Vn = Nominal purge volume of sample (mL) (10.0 mL)	**10**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]

where:	**Example**
Ax = Area of the characteristic ion for the compound being measured	**3122498**
Cis = Concentration of the specific internal standard (ug/L)	**25**
D = Dilution factor for sample as a multiplier (10x = 10)	**1**
Ais = Area of the characteristic ion of the specific internal standard	**611048**
RF = Average RF from the ICAL	**1.004**
Ws = Weight of sample purged (g)	**5**
Wn = Nominal purge weight (g) (5.0 g)	**5**
Cx = Concentration of the compound in the sample being measured (ug/L)	**127.2428**

Dry weight correction:

Percent solids (PCT_S)	**50**
Cd = (Cx) (100)/PCT_S	**254.4856**

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, y = mx + b

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

y = 86550/593147 = 0.1459

Step 3: Solve for x

x = (y - b)/m = [(0.1459 -(- 0.00642)]/ 0.213 = 0.7152

Step 4: Solve for analyte concentration Cx

Cx = Cis (x) = (25.0)(0.7152) = 17.88

Example Spreadsheet Calculation:

Slope from curve, m:	**0.213**
Intercept from curve, b:	**-0.00642**
Area of analyte, Ax:	**86550**
Area of Internal Standard , Ais:	**593147**
Concentration of IS, Cis	**25.00**
Response Ratio:	**0.145917**
Amount Ratio:	**0.715195**
Concentration:	**17.87988**
Units of Internal Standard:	**ug/L**

5.0 Concentration from Quadratic Regression

Step 1 - Retrieve Curve Data from Plot, y = Ax^2 + Bx + C
Where:
Ax^2 + Bx + (C - y) = 0
A, B, C = constants from the ICAL quadratic regression
y = Response ratio = Area of analyte/Area of internal standard (IS)
x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

y = Ax/Ais

Step 3: Solve for x using the quadratic formula
Ax^2 + Bx + C - y = 0

$$x = \frac{b \pm \sqrt{\left(b^2 - 4a(c - y)\right)}}{2a}$$ (Two possible solutions)

Step 4: Solve for analyte concentration Cx

Cx = (Cis)(Amount ratio)

Example Spreadsheet Calculation:

Value of A from plot:	**-0.00629**	
Value of B from plot:	**0.511**	
Value of C from plot:	**-0.0276**	
Area of unknown from quantitation report:	**293821**	
Area of IS from quantiation report:	**784848**	
Response ratio, y:	**0.374367**	
C - y:	**-0.40197**	
Root 1 - Computed amount ratio , X1:	**80.44567**	
Root 2 - Computed amount ratio , X2:	**0.794396**	use this solution
Concentration of IS, Cis:	**25.00**	
Concentration of analyte, Cx:	**19.86**	ug/L

TCLP Volatile

Analyst(s): Ruc
Date: 08-10-09

Analyst/Date		Analyst/Date	
Ruc 8-10-09		Ruc 8-11-09	
Time On	Temp On °C	Time Off	Temp Off °C
1330	24	630	23

ZHE	Sample #	Tests	PSI ON	PSI OFF	Method	Fluid #	Matrix*	%Solid	Size Reduction Yes	Size Reduction No	Int. Wt. (g)	Fluid Vol. (mL)
A												
B												
C												
D												
E												
F												
G												
H	08-17801	VOA	10	10	1311	FI-758	S/S	100		✓	25.00	500
I	02	〃	〃	〃	〃	〃	〃	〃		✓	25.02	〃
J												
K												
L												
M												
N												
O												
P												
Q												
R												
S												
N/A	FBLK	VOA	N/A	N/A	1311	FI-758	N/A	N/A		✓	40	40

Ruc 8-10-09

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: _____

Peer Review By: _____ Supervisor Review: _____

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 062609
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 624 SOP: MSV10 Rev: 7
Method: 5030C/5035A SOP: PAT01 Rev: 12
Maintenance Log ID: 29272

Internal Standard: STD33270 Surrogate Standard: STD33466
CCV: STD33615 LCS: STD33506 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG305829

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M84404	RINSE	NA	1	1		06/26/09 08:10
2	6M84405	WG305764-01 50NG BFB STD	NA	1	1	STD33315	06/26/09 09:20
3	6M84406	WG305764-02 0.3ug/L WATER STD 8260	NA	1	1	STD33615	06/26/09 09:45
4	6M84407	WG305764-03 0.4ug/L WATER STD 8260	NA	1	1	STD33507	06/26/09 10:18
5	6M84408	WG305764-04 1 ug/L WATER STD 8260	NA	1	1	STD33615	06/26/09 10:50
6	6M84409	WG305764-05 2 ug/L WATER STD 8260	NA	1	1	STD33615	06/26/09 11:23
7	6M84410	WG305764-06 5 ug/L WATER STD 8260	NA	1	1	STD33615	06/26/09 11:55
8	6M84411	WG305764-07 20 ug/L WATER STD 8260	NA	1	1	STD33615	06/26/09 12:27
9	6M84412	WG305764-08 50 ug/L WATER STD 8260	NA	1	1	STD33615	06/26/09 13:02
10	6M84413	WG305764-09 100 ug/L WATER STD 8260	NA	1	1	STD33615	06/26/09 13:34
11	6M84414	WG305764-10 200 ug/L WATER STD 8260	NA	1	1	STD33615	06/26/09 14:07
12	6M84415	WG305764-11 300 ug/L WATER STD 8260	NA	1	1	STD33615	06/26/09 14:39
13	6M84416	RINSE	NA	1	1		06/26/09 15:16
14	6M84417	WG305764-12 20ug/L ALT SOURCE	NA	1	1	STD33506	06/26/09 15:48
15	6M84418	WG305829-01 VBLK0626 BLANK 8260	NA	1	1		06/26/09 16:20
16	6M84419	WG305829-02 20ug/L LCS 8260	NA	1	1	STD33506	06/26/09 16:55
17	6M84420	WG305829-03 20ug/L LCSDUP 8260	NA	1	1	STD33506	06/26/09 17:28
18	6M84421	L09060716-32 A 2X 826-LOW	<2	1	2		06/26/09 18:00
19	6M84422	L09060716-19 A 100X 826-LOW	<2	1	100		06/26/09 18:32
20	6M84423	L09060716-25 A 20X 826-LOW	<2	1	20		06/26/09 19:04
21	6M84424	L09060716-26 A 100X 826-LOW	<2	1	100		06/26/09 19:37
22	6M84425	L09060716-20 A 50X 826-LOW	<2	1	50		06/26/09 20:09
23	6M84426	L09060716-27 A 250X 826-LOW	<2	1	250		06/26/09 20:41
24	6M84427	L09060716-24 A 826-LOW	<2	1	1		06/26/09 21:13
25	6M84428	RINSE	NA	1	1		06/26/09 21:46
26	6M84429	RINSE	NA	1	1		06/26/09 22:18
27	6M84430	RINSE	NA	1	1		06/26/09 22:50
28	6M84436	WG305858-01 VBLK0629 BLANK 8260	NA	1	1		06/29/09 10:21
29	6M84437	WG305858-02 20ug/L LCS 8260	NA	1	1	STD33506	06/29/09 10:53

Comments

Seq.	Rerun	Dil.	Reason	Analytes
18	X	10	Over Calibration Range	TCE

Approved: June 30, 2009

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 062609
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 624 SOP: MSV10 Rev: 7
Method: 5030C/5035A SOP: PAT01 Rev: 12
Maintenance Log ID: 29272

Internal Standard: STD33270 Surrogate Standard: STD33466
CCV: STD33615 LCS: STD33506 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG305829

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 6M84421				
19	X	50	Analyzed too dilute	
File ID: 6M84422				
	DNR			
20	X	10	Analyzed too dilute	
File ID: 6M84423				
	DNR			
21	X	25	Analyzed too dilute	
File ID: 6M84424				
	DNR			

Approved: June 30, 2009

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS6 Dataset: 081109
Analyst1: MES Analyst2: NA
Method: 8260B SOP: MSV01 Rev: 13
Method: 624 SOP: MSV10 Rev: 7
Method: 5030C/5035A SOP: PAT10 Rev: 12
Maintenance Log ID: 29760

Internal Standard: STD34515 Surrogate Standard: STD34168
CCV: STD34357 LCS: STD34517 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA
Workgroups: WG309394

Comments:

Seq.	File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
1	6M85213	WG309393-01 50NG BFB STD 8260	NA	1	1	STD34563	08/11/09 08:09
2	6M85214	WG309393-02 50ug/L WATER STD 8260	NA	1	1	STD34357	08/11/09 08:34
3	6M85215	WG309394-01 VBLK0810 EXT BLANK	NA	1	50		08/11/09 09:04
4	6M85216	WG309394-01 VBLK0810 BLANK 8260	NA	1	1		08/11/09 09:36
5	6M85217	WG309394-02 20ug/L LCS 8260	NA	1	1	STD34517	08/11/09 10:07
6	6M85218	WG309394-03 20ug/L LCSDUP 8260	NA	1	1	STD34517	08/11/09 10:38
7	6M85219	L09080151-03 B D1 5000X 826-SPE	<2	1	5000		08/11/09 11:10
8	6M85220	L09080178-01 A 10X 826-TC	NA	17	10		08/11/09 11:41
9	6M85221	L09080178-02 A 10X 826-TC	NA	17	10		08/11/09 12:13
10	6M85222	L09080147-05 A 826-LOW	<2	1	1		08/11/09 12:45
11	6M85223	L09080168-02 A 826-SPE	<2	1	1		08/11/09 13:17
12	6M85224	L09080130-09 B 826-SPE	<2	1	1		08/11/09 13:48
13	6M85225	L09080134-01 B 826-SPE	<2	1	1		08/11/09 14:19
14	6M85226	L09080134-02 B 826-SPE	<2	1	1		08/11/09 14:51
15	6M85227	L09080168-01 A 826-SPE	<2	1	1		08/11/09 15:22
16	6M85228	L09080147-01 A 826-LOW	<2	1	1		08/11/09 15:54
17	6M85229	L09080147-02 A 826-LOW	<2	1	1		08/11/09 16:25
18	6M85230	L09080076-01 A 826-SPE	<2	1	1		08/11/09 16:57
19	6M85231	L09080076-02 A 826-SPE	<2	1	1		08/11/09 17:29
20	6M85232	L09080076-03 A 826-SPE	<2	1	1		08/11/09 18:01
21	6M85233	L09080076-04 A 826-SPE	<2	1	1		08/11/09 18:33
22	6M85234	L09080076-05 A 826-SPE	<2	1	1		08/11/09 19:06
23	6M85235	L09080076-06 A 826-SPE	<2	1	1		08/11/09 19:38
24	6M85236	RINSE	NA	1	1		08/11/09 20:09
25	6M85237	WG309394-04 624 BLANK	NA	1	1		08/11/09 20:42
26	6M85238	L09080175-08 B D1 100X 624-SPE	7	2	100		08/11/09 21:14
27	6M85239	L09080175-10 B 2X 624-SPE	<2	2	2		08/11/09 21:46
28	6M85240	L09080175-12 A 5X 624-SPE	<2	2	5		08/11/09 22:18

Comments

Seq.	Rerun	Dil.	Reason	Analytes
15	X	10	Over Calibration Range	cis-1,2-DCE
File ID: 6M85227				

Approved: August 12, 2009

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument:	HPMS6	Dataset:	081109		
Analyst1:	MES	Analyst2:	NA		
Method:	8260B	SOP:	MSV01	Rev:	13
Method:	624	SOP:	MSV10	Rev:	7
Method:	5030C/5035A	SOP:	PAT10	Rev:	12
Maintenance Log ID:	29760				

Internal Standard: STD34515 Surrogate Standard: STD34168

CCV: STD34357 LCS: STD34517 MS/MSD: NA

Column 1 ID: RTX502.2 Column 2 ID: NA

Workgroups: WG309394

Comments:

Comments

Seq.	Rerun	Dil.	Reason	Analytes
28	X	50	Over Calibration Range	TCE
File ID: 6M85240				

Approved: August 12, 2009

Microbac Laboratories Inc.

Data Checklist

Date: 26-JUN-2009
Analyst: MES
Analyst: NA
Method: 8260/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 28846
Analytical Workgroups: WG305829

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
29-JUN-2009

Secondary Reviewer:
30-JUN-2009

CHECKLIST1 - Modified 03/05/2008
Generated: JUN-30-2009 10:35:23

Microbac Laboratories Inc.

Data Checklist

Date: 11-AUG-2009
Analyst: MES
Analyst: NA
Method: 8260/624
Instrument: HPMS6
Curve Workgroup: NA
Runlog ID: 29567
Analytical Workgroups: WG309394

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	X
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	MES
Secondary Reviewer	MDA
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
12-AUG-2009

Secondary Reviewer:
12-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-12-2009 13:03:40

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00083261

Analytical Method: 8260B **AAB#:** WG309394

Login Number: L09080178

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRDS02	01	08/07/09	08/10/09	3	14				14		08/11/09	.9	14	
PRDS02	01	08/07/09	08/10/09	3					14		08/11/09	.9	14	
PRDS03	02	08/07/09	08/10/09	3	14				14		08/11/09	.9	14	
PRDS03	02	08/07/09	08/10/09	3					14		08/11/09	.9	14	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1463341
Report generated 08/12/2009 13:47

Login Number: L09080178
Instrument Id: HPMS6
Workgroup (AAB#): WG309394

Method: 8260
CAL ID: HPMS6-26-JUN-09
Matrix: Leachate

Sample Number	Dilution	Tag	1	2	3	4
L09080178-01	10.0	DL01	93.9	109	97.2	101
L09080178-02	10.0	DL01	96.3	110	98.7	103
WG309394-01	1.00	01	94.5	106	107	99.9
WG309394-02	1.00	01	91.3	103	93.9	100
WG309394-03	1.00	01	95.3	105	98.4	104
WG309394-04	1.00	01	97.6	109	106	102

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	80	-	120
2 - Dibromofluoromethane	86	-	118
3 - 4-Bromofluorobenzene	86	-	115
4 - Toluene-d8	88	-	110

Underline = Result out of surrogate limits

DL = surrogate diluted out
ND = surrogate not detected

SURROGATES - Modified 03/06/2008
PDF File ID: 1464163
Report generated: 08/12/2009 13:48

METHOD BLANK SUMMARY

Login Number:	L09080178	Work Group:	WG309394
Blank File ID:	6M85216	Blank Sample ID:	WG309394-01
Prep Date:	08/11/09 09:36	Instrument ID:	HPMS6
Analyzed Date:	08/11/09 09:36	Method:	8260B
Analyst:	MES		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309394-02	6M85217	08/11/09 10:07	01
LCS2	WG309394-03	6M85218	08/11/09 10:38	01
PRDS02	L09080178-01	6M85220	08/11/09 11:41	DL01
PRDS03	L09080178-02	6M85221	08/11/09 12:13	DL01

Report Name: BLANK_SUMMARY
PDF File ID: 1463342
Report generated 08/12/2009 13:47

Login Number:L09080178 Prep Date:08/11/09 09:36 Sample ID:WG309394-01
Instrument ID:HPMS6 Run Date:08/11/09 09:36 Prep Method:5030C
File ID:6M85216 Analyst:MES Method:8260B
Workgroup (AAB#):WG309394 Matrix:Leachate Units:ug/L
Contract #:DACA56-94-D-0020 Cal ID: HPMS6-26-JUN-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Benzene	0.125	5.00	0.125	1	U
Carbon tetrachloride	0.250	5.00	0.250	1	U
Chlorobenzene	0.125	5.00	0.125	1	U
Chloroform	0.125	5.00	0.125	1	U
1,2-Dichloroethane	0.250	5.00	0.250	1	U
1,1-Dichloroethene	0.500	5.00	0.500	1	U
Methyl Ethyl Ketone	2.50	10.0	2.50	1	U
Tetrachloroethene	0.250	5.00	0.250	1	U
Trichloroethene	0.250	5.00	0.250	1	U
Vinyl chloride	0.250	10.0	0.250	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
Dibromofluoromethane	106	86 - 118	PASS
1,2-Dichloroethane-d4	94.5	80 - 120	PASS
Toluene-d8	99.9	88 - 110	PASS
4-Bromofluorobenzene	107	86 - 115	PASS

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1463343
12-AUG-2009 13:47

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00083265

Login Number: L09080178 Analyst: MES Prep Method: 5030C
Instrument ID: HPMS6 Matrix: Leachate Method: 8260B
Workgroup (AAB#): WG309394 Units: ug/L
QC Key: STD Lot #: STD34517

Sample ID: WG309394-02 LCS File ID: 6M85217 Run Date: 08/11/2009 10:07
Sample ID: WG309394-03 LCS2 File ID: 6M85218 Run Date: 08/11/2009 10:38

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Benzene	20.0	18.7	93.6	20.0	18.6	93.0	0.581	80 - 121	20	
Carbon tetrachloride	20.0	19.3	96.5	20.0	19.3	96.6	0.0532	65 - 140	20	
Chlorobenzene	20.0	18.2	91.2	20.0	18.9	94.6	3.71	80 - 120	20	
Chloroform	20.0	19.0	95.2	20.0	19.3	96.4	1.30	80 - 125	20	
1,2-Dichloroethane	20.0	19.0	94.9	20.0	19.2	96.1	1.22	80 - 129	20	
1,1-Dichloroethene	20.0	17.9	89.6	20.0	18.1	90.4	0.894	80 - 132	20	
Methyl Ethyl Ketone	20.0	19.1	95.3	20.0	19.1	95.3	0.0633	30 - 150	20	
Tetrachloroethene	20.0	19.7	98.7	20.0	19.3	96.5	2.31	80 - 124	20	
Trichloroethene	20.0	19.5	97.5	20.0	19.0	95.0	2.59	80 - 122	20	
Vinyl chloride	20.0	22.6	113	20.0	22.7	114	0.400	65 - 140	20	

Surogates	LCS	LCS2	Surrogate Limits	Qualifier
	% Recovery	% Recovery		
1,2-Dichloroethane-d4	91.3	95.3	80 - 120	PASS
Dibromofluoromethane	103	105	86 - 118	PASS
4-Bromofluorobenzene	93.9	98.4	86 - 115	PASS
Toluene-d8	100	104	88 - 110	PASS

* FAILS %REC LIMIT

\# FAILS RPD LIMIT

LCS_LCS2 - Modified 03/06/2008
PDF File ID: 1463149
Report generated: 08/12/2009 13:47

BFB

Login Number: L09080178
Instrument: HPMS6
Analyst: MES
Workgroup: WG305764

Tune ID: WG305764-01
Run Date: 06/26/2009
Run Time: 09:20
File ID: 6M84405
Cal ID: HPMS6-26-JUN-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	27.3	16543	PASS
75.0	95.0	30.0	60.0	49.3	29800	PASS
95.0	95.0	100	100	100	60488	PASS
96.0	95.0	5.00	9.00	7.10	4292	PASS
173	174	0	2.00	0.804	408	PASS
174	95.0	50.0	100	83.9	50760	PASS
175	174	5.00	9.00	7.10	3606	PASS
176	174	95.0	101	97.9	49709	PASS
177	176	5.00	9.00	6.04	3004	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG305764-02	STD	01	06/26/2009 09:45	
WG305764-03	STD	01	06/26/2009 10:18	
WG305764-04	STD	01	06/26/2009 10:50	
WG305764-05	STD	01	06/26/2009 11:23	
WG305764-06	STD	01	06/26/2009 11:55	
WG305764-07	STD	01	06/26/2009 12:27	
WG305764-08	STD-CCV	01	06/26/2009 13:02	
WG305764-09	STD	01	06/26/2009 13:34	
WG305764-10	STD	01	06/26/2009 14:07	
WG305764-11	STD	01	06/26/2009 14:39	
WG305764-12	SSCV	01	06/26/2009 15:48	

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1464160
Report generated 08/12/2009 13:48

BFB

Login Number: L09080178
Instrument: HPMS6
Analyst: MES
Workgroup: WG309393

Tune ID: WG309393-01
Run Date: 08/11/2009
Run Time: 08:09
File ID: 6M85213
Cal ID: HPMS6-26-JUN-09

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	30.9	9236	PASS
75.0	95.0	30.0	60.0	45.8	13685	PASS
95.0	95.0	100	100	100	29864	PASS
96.0	95.0	5.00	9.00	7.02	2096	PASS
173	174	0	2.00	0.879	244	PASS
174	95.0	50.0	100	92.9	27746	PASS
175	174	5.00	9.00	7.07	1963	PASS
176	174	95.0	101	97.5	27050	PASS
177	176	5.00	9.00	5.98	1617	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG309393-02	CCV	01	08/11/2009 08:34	
WG309394-01	BLANK	01	08/11/2009 09:36	
WG309394-02	LCS	01	08/11/2009 10:07	
WG309394-03	LCS2	01	08/11/2009 10:38	
L09080178-01	PRDS02	DL01	08/11/2009 11:41	
L09080178-02	PRDS03	DL01	08/11/2009 12:13	
WG309394-04	BLANK2	01	08/11/2009 20:42	*

* Sample past 12 hour tune limit

TUNE - Modified 03/06/2008
PDF File ID: 1464160
Report generated 08/12/2009 13:48

Login Number: L09080178 **Instrument ID:** HPMS6
Analytical Method: 8260B **Initial Calibration Date:** 26-JUN-09 14:39
ICAL Workgroup: WG305764 **Column ID:** F

Analyte		AVG RF	% RSD	LINEAR (R^2)	QUAD(R^2)
1,1-Dichloroethene	CCC	0.4781	6.26		
Chloroform	CCC	0.4477	7.55		
Vinyl Chloride	CCC	0.4067	6.32		
1,1,2,2-Tetrachloroethane	SPCC	0.3395	4.82		
1,1-Dichloroethane	SPCC	0.5365	3.60		
Bromoform	SPCC	0.1631	12.5		
Chlorobenzene	SPCC	0.8311	4.66		
Chloromethane	SPCC	0.6432	12.8		
1,2-Dichloroethane		0.3557	5.69		
2-Butanone		0.08753	4.12		
Benzene		0.9787	4.80		
Carbon Tetrachloride		0.4123	9.31		
Tetrachloroethene		0.3205	8.83		
Trichloroethene		0.2783	8.96		

R = Correlation coefficient; 0.995 minimum
R^2 = Coefficient of determination; 0.99 minimum

If the %RSD is greater than the limit specified by the method or project QAP, then linear or quadratic equations will be used.

INT_CAL - Modified 03/06/2008
PDF File ID: 1464158
Report generated 08/12/2009 13:48

Login Number: L09080178
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 26-JUN-09 14:39
Column ID: F

Analyte	WG305764-02			WG305764-03			WG305764-04		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA	0.400	4601.00000	0.4406	1.00	11331.0000	0.4619
Chloroform	0.300	4064.00000	0.4715	0.400	4007.00000	0.3837	1.00	11781.0000	0.4803
Vinyl Chloride	NA	NA	NA	0.400	4584.00000	0.4390	1.00	9679.00000	0.3946
1,1,2,2-Tetrachloroethane	NA	NA	NA	0.400	2001.00000	0.3776	1.00	4272.00000	0.3360
1,1-Dichloroethane	NA	NA	NA	0.400	5556.00000	0.5321	1.00	12783.0000	0.5211
Bromoform	NA	NA	NA	NA	NA	NA	1.00	3263.00000	0.1411
Chlorobenzene	NA	NA	NA	0.400	8342.00000	0.8402	1.00	20234.0000	0.8751
Chloromethane	NA	NA	NA	NA	NA	NA	1.00	19815.0000	0.8078
1,2-Dichloroethane	NA	NA	NA	0.400	4084.00000	0.3911	1.00	8256.00000	0.3366
2-Butanone	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	0.400	10189.0000	0.9758	1.00	25707.0000	1.048
Carbon Tetrachloride	NA	NA	NA	0.400	3703.00000	0.3546	1.00	9567.00000	0.3900
Tetrachloroethene	NA	NA	NA	0.400	2825.00000	0.2845	1.00	6556.00000	0.2835
Trichloroethene	NA	NA	NA	0.400	2458.00000	0.2354	1.00	6752.00000	0.2752

INT_CAL - Modified 03/06/2008
PDF File ID: 1464158
Report generated 08/12/2009 13:48

Login Number: L09080178
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 26-JUN-09 14:39
Column ID: F

Analyte	WG305764-05			WG305764-06			WG305764-07		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	2.00	22079.0000	0.4512	5.00	56298.0000	0.4555	20.0	253388.000	0.5144
Chloroform	2.00	20002.0000	0.4088	5.00	52825.0000	0.4274	20.0	234149.000	0.4754
Vinyl Chloride	2.00	18710.0000	0.3824	5.00	50558.0000	0.4091	20.0	215752.000	0.4380
1,1,2,2-Tetrachloroethane	2.00	8682.00000	0.3295	5.00	22823.0000	0.3420	20.0	89100.0000	0.3249
1,1-Dichloroethane	2.00	25186.0000	0.5147	5.00	63483.0000	0.5136	20.0	277766.000	0.5639
Bromoform	2.00	6310.00000	0.1379	5.00	16693.0000	0.1465	20.0	78282.0000	0.1734
Chlorobenzene	2.00	35743.0000	0.7814	5.00	86925.0000	0.7631	20.0	382831.000	0.8481
Chloromethane	2.00	32942.0000	0.6732	5.00	78236.0000	0.6330	20.0	313218.000	0.6359
1,2-Dichloroethane	2.00	16278.0000	0.3327	5.00	41522.0000	0.3360	20.0	181438.000	0.3684
2-Butanone	NA	NA	NA	5.00	11490.0000	0.09300	20.0	42436.0000	0.08620
Benzene	2.00	44392.0000	0.9072	5.00	113319.000	0.9169	20.0	499439.000	1.014
Carbon Tetrachloride	2.00	18370.0000	0.3754	5.00	48520.0000	0.3926	20.0	221293.000	0.4493
Tetrachloroethene	2.00	14005.0000	0.3062	5.00	35075.0000	0.3079	20.0	158072.000	0.3502
Trichloroethene	2.00	12811.0000	0.2618	5.00	31886.0000	0.2580	20.0	145912.000	0.2962

INT_CAL - Modified 03/06/2008
PDF File ID: 1464158
Report generated 08/12/2009 13:48

Login Number: L09080178
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 26-JUN-09 14:39
Column ID: F

Analyte	WG305764-08			WG305764-09			WG305764-10		
	CONC	RESP	RF	CONC	RESP	RF	CONC	RESP	RF
1,1-Dichloroethene	50.0	663491.000	0.5079	100	1322204.00	0.4812	200	2969482.00	0.5120
Chloroform	50.0	613417.000	0.4696	100	1233592.00	0.4490	200	2687951.00	0.4635
Vinyl Chloride	50.0	560509.000	0.4291	100	1041385.00	0.3790	200	2217435.00	0.3824
1,1,2,2-Tetrachloroethane	50.0	250490.000	0.3400	100	507358.000	0.3320	200	1103391.00	0.3341
1,1-Dichloroethane	50.0	726884.000	0.5565	100	1481822.00	0.5393	200	3192207.00	0.5504
Bromoform	50.0	217917.000	0.1804	100	448403.000	0.1773	200	1005156.00	0.1852
Chlorobenzene	50.0	1029408.00	0.8521	100	2106111.00	0.8327	200	4647399.00	0.8562
Chloromethane	50.0	797766.000	0.6107	100	1515793.00	0.5517	200	3420811.00	0.5899
1,2-Dichloroethane	50.0	478447.000	0.3663	100	967363.000	0.3521	200	2101751.00	0.3624
2-Butanone	50.0	114090.000	0.08730	100	231487.000	0.08420	200	525379.000	0.09060
Benzene	50.0	1301273.00	0.9962	100	2690234.00	0.9791	200	5754895.00	0.9923
Carbon Tetrachloride	50.0	589037.000	0.4509	100	1214850.00	0.4421	200	2573777.00	0.4438
Tetrachloroethene	50.0	420822.000	0.3483	100	852270.000	0.3370	200	1879091.00	0.3462
Trichloroethene	50.0	394481.000	0.3020	100	802849.000	0.2922	200	1772195.00	0.3056

INT_CAL - Modified 03/06/2008
PDF File ID: 1464158
Report generated 08/12/2009 13:48

Login Number: L09080178
Analytical Method: 8260B
Instrument ID: HPMS6
Initial Calibration Date: 26-JUN-09 14:39
Column ID: F

Analyte	WG305764-11		
	CONC	RESP	RF
1,1-Dichloroethene	NA	NA	NA
Chloroform	NA	NA	NA
Vinyl Chloride	NA	NA	NA
1,1,2,2-Tetrachloroethane	NA	NA	NA
1,1-Dichloroethane	NA	NA	NA
Bromoform	NA	NA	NA
Chlorobenzene	NA	NA	NA
Chloromethane	NA	NA	NA
1,2-Dichloroethane	NA	NA	NA
2-Butanone	300	786805.000	0.08390
Benzene	NA	NA	NA
Carbon Tetrachloride	NA	NA	NA
Tetrachloroethene	NA	NA	NA
Trichloroethene	NA	NA	NA

INT_CAL - Modified 03/06/2008
PDF File ID: 1464158
Report generated 08/12/2009 13:48

Login Number: L09080178 Run Date: 06/26/2009 Sample ID: WG305764-12
Instrument ID: HPMS6 Run Time: 15:48 Method: 8260B
File ID: 6M84417 Analyst: MES QC Key: STD
ICal Workgroup: WG305764 Cal ID: HPMS6 - 26-JUN-09

Analyte		Expected	Found	Units	RF	%D	UCL	Q
Chloroform	CCC	20.0	20.2	ug/L	0.452	0.800	30	
1,1-Dichloroethene	CCC	20.0	20.4	ug/L	0.487	1.90	30	
Vinyl Chloride	CCC	20.0	20.2	ug/L	0.412	1.20	30	
Chlorobenzene	SPCC	20.0	19.7	ug/L	0.818	1.60	30	
Chloromethane	SPCC	20.0	20.3	ug/L	0.652	1.40	30	
1,1,2,2-Tetrachloroethane	SPCC	20.0	18.6	ug/L	0.316	7.00	30	
1,1-Dichloroethane	SPCC	20.0	20.2	ug/L	0.542	1.10	30	
Bromoform	SPCC	20.0	18.6	ug/L	0.152	7.10	30	
Benzene		20.0	19.5	ug/L	0.955	2.40	30	
Carbon Tetrachloride		20.0	20.6	ug/L	0.425	3.00	30	
1,2-Dichloroethane		20.0	19.1	ug/L	0.341	4.30	30	
2-Butanone		20.0	21.1	ug/L	0.0924	5.60	30	
Tetrachloroethene		20.0	20.4	ug/L	0.327	1.90	30	
Trichloroethene		20.0	20.4	ug/L	0.283	1.80	30	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083274

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309393-02
Instrument ID: HPMS6 Run Time: 08:34 Method: 8260B
File ID: 6M85214 Analyst: MES QC Key: STD
Workgroup (AAB#): WG309394 Cal ID: HPMS6 - 26-JUN-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
Chloroform	CCC	50.0	52.3	ug/L	0.468	4.61	20	
1,1-Dichloroethene	CCC	50.0	52.6	ug/L	0.503	5.23	20	
Vinyl Chloride	CCC	50.0	56.7	ug/L	0.461	13.4	20	
1,2-Dichloropropane	CCC	50.0	52.3	ug/L	0.286	4.67	20	
Ethylbenzene	CCC	50.0	51.0	ug/L	0.463	2.03	20	
Toluene	CCC	50.0	52.4	ug/L	1.22	4.71	20	
Chlorobenzene	SPCC	50.0	50.4	ug/L	0.838	0.842	40	
1,1,2,2-Tetrachloroethane	SPCC	50.0	47.9	ug/L	0.326	4.12	40	
1,1-Dichloroethane	SPCC	50.0	51.5	ug/L	0.552	2.95	40	
Bromoform	SPCC	50.0	58.1	ug/L	0.190	16.3	40	
Chloromethane	SPCC	50.0	54.9	ug/L	0.706	9.77	40	
Benzene		50.0	51.0	ug/L	0.999	2.05	40	
Carbon Tetrachloride		50.0	54.6	ug/L	0.450	9.14	40	
1,2-Dichloroethane		50.0	50.5	ug/L	0.359	0.931	40	
2-Butanone		50.0	49.6	ug/L	0.0868	0.862	40	
Tetrachloroethene		50.0	54.5	ug/L	0.349	9.00	40	
Trichloroethene		50.0	52.7	ug/L	0.293	5.30	40	

* Exceeds %D Criteria

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

CCV - Modified 03/05/2008
PDF File ID: 1464161
Report generated 08/12/2009 13:48

INTERNAL STANDARD AREA SUMMARY
(COMPARED TO CCV)

00083275

Login Number: L09080178
Instrument ID: HPMS6
Workgroup (AAB#): WG309394

CCV Number: WG309393-02
CAL ID: HPMS6-26-JUN-09
Matrix: TCLP

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG309393-02	NA	NA	380642	603320	671027
Upper Limit	NA	NA	761284	1206640	1342054
Lower Limit	NA	NA	190321	301660	335514
L09080178-01	10.0	DL01	321805	494033	507649
L09080178-02	10.0	DL01	310764	481279	500409
WG309394-01	1.00	01	280785	528589	528007
WG309394-02	1.00	01	344426	539057	568484
WG309394-03	1.00	01	345647	539275	577180
WG309394-04	1.00	01	205433	381895	388090

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD - Modified 03/06/2008
PDF File ID: 1464162
Report generated 08/12/2009 13:48

Microbac Laboratories Inc.

INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO CCV)

00083276

Login Number: L09080178
Instrument ID: HPMS6
Workgroup (AAB#): WG309394

CCV Number: WG309393-02
CAL ID: HPMS6-26-JUN-09
Matrix: TCLP

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG309393-02	NA	NA	18.59	15.04	10.58
Upper Limit	NA	NA	19.09	15.54	11.08
Lower Limit	NA	NA	18.09	14.54	10.08
L09080178-01	10.0	DL01	18.58	15.03	10.57
L09080178-02	10.0	DL01	18.58	15.04	10.57
WG309394-01	1.00	01	18.58	15.04	10.57
WG309394-02	1.00	01	18.58	15.04	10.57
WG309394-03	1.00	01	18.58	15.04	10.57
WG309394-04	1.00	01	18.58	15.04	10.57

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits

INTERNAL_STD_RT - Modified 03/06/2008
PDF File ID: 1464164
Report generated 08/12/2009 13:48

2.2 Metals Data

2.2.1 Metals I C P Data

2.2.1.1 Summary Data

LABORATORY REPORT

00083280

L09080178

08/12/09 14:33

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS02	L09080178-01	6010B	1	08-AUG-09
PRDS03	L09080178-02	6010B	1	08-AUG-09

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083281

Sample Number: **L09080178-01**
Client ID: **PRDS02**
Matrix: **Leachate**
Workgroup Number: **WG309405**
Collect Date: **08/07/2009 14:15**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **3015**
Analytical Method: **6010B**
Analyst: **PDM**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **08/11/2009 07:13**
Cal Date: **08/11/2009 09:58**
Run Date: **08/11/2009 12:19**
File ID: **P2.081109.121909**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	1	.1	D004	5
Barium, TCLP	7440-39-3	1.03		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1	0.737	J	1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083282

Sample Number: **L09080178-02**
Client ID: **PRDS03**
Matrix: **Leachate**
Workgroup Number: **WG309405**
Collect Date: **08/07/2009 14:30**
Sample Tag: **01**

PrePrep Method: **1311**
Prep Method: **3015**
Analytical Method: **6010B**
Analyst: **PDM**
Dilution: **1**
Units: **mg/L**

Instrument: **PE-ICP2**
Prep Date: **08/11/2009 07:13**
Cal Date: **08/11/2009 09:58**
Run Date: **08/11/2009 12:25**
File ID: **P2.081109.122546**

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Arsenic, TCLP	7440-38-2		U	1	.1	D004	5
Barium, TCLP	7440-39-3	1.47		.1	.025	D005	100
Cadmium, TCLP	7440-43-9		U	.1	.025	D006	1
Chromium, TCLP	7440-47-3		U	.2	.025	D007	5
Lead, TCLP	7439-92-1	0.574	J	1	.1	D008	5
Selenium, TCLP	7782-49-2		U	.8	.4	D010	1
Silver, TCLP	7440-22-4		U	.1	.05	D011	5

U Not detected at or above adjusted sample detection limit
J The analyte was positively identified, but the quantitation was below the RL

2.2.1.2 QC Summary Data

Example 6010 Calculations
Perkin Elmer Optima 4300 DV

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Example 6010 Calculations
Thermo Scientific IRIS Advantage

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

Example 6010 Calculations
Thermo Scientific iCAP 6500

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and four standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system in ug/mL (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial volume (mL)	50
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/mL (mg/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (mg/L) (ppm)	0.1
Vf = Final volume (mL)	50
Vi = Initial weight (g)	1
D = Dilution factor as a multiplier (10X = 10)	1
Cx = Concentration of element in ug/g (mg/kg)	5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:	**Example:**
Cx = Concentration calculated as received (wet basis)	5
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (mg/kg)	6.25

TCLP Non-Volatile

Analyst(s): Ruc
Date: 08-10-09

Analyst/Date		Analyst/Date	
Ruc 8-10-09		Ruc 8-11-09	
Time On	Temp On °C	Time Off	Temp Off °C
1330	24	0630	23

Jug #	Sample #	Tests	Method	Fluid #	Matrix*	%Solid	Size Reduction Yes	Size Reduction No	Int. Wt. (g)	Fluid Vol. (mL)
D	08-144-01	ME	1311	FF758	S/S	100		✓	100.07	2000
D	08-149-03				S		✓		100.08	
D	05						✓		100.01	
D	08-154-01						✓		100.04	
D	08-171-01							✓	100.02	
D	02							✓	100.00	
D	08-178-01				S/S			✓	100.06	
D	02				1			✓	100.05	
N/A	FBLK				N/A	N/A		✓	2000	
2	08-149-04			Filtered	W	2.5		✓	100	100

Ruc 8-10-09

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: Filtered SY processed @1300 - Ruc

Peer Review By: _____ Supervisor Review: _____

Microbac Laboratories Inc.
Microwave Digestion Log

00083288

Workgroup: WG309389
Analyst: VC
Spike Analyst: VC
Run Date: 08/11/2009 07:13
Method: 3015

SOP: ME407 Revison 10
Spike Solution: STD34340
Spike Witness: BRG
HNO3 Lot #: COA13945
Digest tubes Lot #: COA14013

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG309389-02	BLANK	17	5 mL	50 mL	203.443 g	203.423 g		
2	WG309362-01	FBLK	17	5 mL	50 mL	204.539 g	204.526 g		
3	WG309389-03	LCS	17	5 mL	50 mL	211.026 g	211.009 g	5 mL	
4	L09080144-01	SAMP	17	5 mL	50 mL	208.67 g	208.649 g		08/11/09
5	L09080149-03	SAMP	17	5 mL	50 mL	208.998 g	208.987 g		08/17/09
6	L09080149-04	SAMP	17	5 mL	50 mL	209.956 g	209.943 g		08/17/09
7	L09080149-05	SAMP	17	5 mL	50 mL	210.468 g	210.456 g		08/17/09
8	L09080154-01	SAMP	17	5 mL	50 mL	210.544 g	210.523 g		08/17/09
9	L09080171-01	SAMP	17	5 mL	50 mL	211.597 g	211.596 g		08/14/09
10	L09080171-02	SAMP	17	5 mL	50 mL	211.096 g	211.097 g		08/14/09
11	L09080178-01	SAMP	17	5 mL	50 mL	211.281 g	211.275 g		08/11/09
12	WG309389-01	REF	17	5 mL	50 mL	207.207 g	207.199 g		
13	L09080178-02	SAMP	17	5 mL	50 mL	207.207 g	207.199 g		08/11/09
14	WG309389-04	MS	17	5 mL	50 mL	209.253 g	209.251 g	5 mL	
15	WG309389-05	MSD	17	5 mL	50 mL	211.968 g	211.96 g	5 mL	

Analyst: Vicki Collins

Reviewer: Brenda Gregory

MW_DIG - Modified 07/02/2008
PDF ID: 1462695
Report generated: 08/11/2009 08:21

Microbac®

Microbac Laboratories Inc.

Instrument Run Log

Instrument: PE-ICP2 Dataset: 081109HR.CSV
Analyst1: PDM Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 10
Maintenance Log ID: 29751

Calibration Std: STD34504 ICV/CCV Std: STD34469 Post Spike: STD34340
ICSA: STD34193 ICSAB: STD34508 Int. Std: STD34564

Workgroups: 309405,308987,309378,309352

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	P2.081109.093218	WG309461-01	Calibration Point		1		08/11/09 09:32
2	P2.081109.093852	WG309461-02	Calibration Point		1		08/11/09 09:38
3	P2.081109.094523	WG309461-03	Calibration Point		1		08/11/09 09:45
4	P2.081109.095201	WG309461-04	Calibration Point		1		08/11/09 09:52
5	P2.081109.095841	WG309461-05	Calibration Point		1		08/11/09 09:58
6	P2.081109.100423	WG309461-06	Initial Calibration Verification		1		08/11/09 10:04
7	P2.081109.101104	WG309461-07	Initial Calib Blank		1		08/11/09 10:11
8	P2.081109.101742	WG309461-08	Interference Check		1		08/11/09 10:17
9	P2.081109.102322	WG309461-09	Interference Check		1		08/11/09 10:23
10	P2.081109.102903	WG309461-10	CCV		1		08/11/09 10:29
11	P2.081109.103541	WG309461-11	CCB		1		08/11/09 10:35
12	P2.081109.112442	WG309461-12	CCV		1		08/11/09 11:24
13	P2.081109.113126	WG309461-13	CCB		1		08/11/09 11:31
14	P2.081109.113912	WG309389-02	Method/Prep Blank	5/50	1		08/11/09 11:39
15	P2.081109.114546	WG309389-03	Laboratory Control S	5/50	1		08/11/09 11:45
16	P2.081109.115226	WG309362-01	Fluid Blank		1		08/11/09 11:52
17	P2.081109.115908	L09080144-01	PRDS01	5/50	1		08/11/09 11:59
18	P2.081109.120544	WG309405-01	Post Digestion Spike		1	L09080144-01	08/11/09 12:05
19	P2.081109.121229	WG309405-02	Serial Dilution		5	L09080144-01	08/11/09 12:12
20	P2.081109.121909	L09080178-01	PRDS02	5/50	1		08/11/09 12:19
21	P2.081109.122546	WG309389-01	Reference Sample		1	L09080178-02	08/11/09 12:25
22	P2.081109.123230	WG309389-04	Matrix Spike	5/50	1	L09080178-02	08/11/09 12:32
23	P2.081109.123914	WG309389-05	Matrix Spike Duplica	5/50	1	L09080178-02	08/11/09 12:39
24	P2.081109.124600	WG309461-14	CCV		1		08/11/09 12:46
25	P2.081109.125240	WG309461-15	CCB		1		08/11/09 12:52
26	P2.081109.125916	L09080149-03	GT090086	5/50	1		08/11/09 12:59
27	P2.081109.130554	L09080149-04	GT090087	5/50	1		08/11/09 13:05
28	P2.081109.131236	L09080149-05	GT090088	5/50	1		08/11/09 13:12
29	P2.081109.133008	L09080154-01	GM090046	5/50	1		08/11/09 13:30
30	P2.081109.133646	L09080171-01	TANK \#2 - 1	5/50	1		08/11/09 13:36
31	P2.081109.134331	L09080171-02	TANK \#2 - 2	5/50	1		08/11/09 13:43
32	P2.081109.135012	WG309461-16	CCV		1		08/11/09 13:50
33	P2.081109.135651	WG309461-17	CCB		1		08/11/09 13:56
34	P2.081109.140329	WG308941-02	Method/Prep Blank	50/50	1		08/11/09 14:03
35	P2.081109.141009	WG308941-03	Laboratory Control S	50/50	1		08/11/09 14:10
36	P2.081109.141643	L09080054-01	DRL-Z-OUTLET 006	50/50	1		08/11/09 14:16
37	P2.081109.142326	WG308987-01	Post Digestion Spike		1	L09080054-01	08/11/09 14:23

Page: 1 Approved: August 12, 2009

Maren Berry

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: PE-ICP2 Dataset: 081109HR.CSV
Analyst1: PDM Analyst2: N/A
Method: 6010B SOP: ME600E Rev: 10
Maintenance Log ID: 29751

Calibration Std: STD34504 ICV/CCV Std: STD34469 Post Spike: STD34340
ICSA: STD34193 ICSAB: STD34508 Int. Std: STD34564

Workgroups: 309405,308987,309378,309352

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	P2.081109.143011	WG308987-02	Serial Dilution		5	L09080054-01	08/11/09 14:30
39	P2.081109.143644	WG308941-01	Reference Sample		1	L09080055-02	08/11/09 14:36
40	P2.081109.144324	WG308941-04	Matrix Spike	50/50	1	L09080055-02	08/11/09 14:43
41	P2.081109.145029	WG308941-05	Matrix Spike Duplica	50/50	1	L09080055-02	08/11/09 14:50
42	P2.081109.145708	WG309461-18	CCV		1		08/11/09 14:57
43	P2.081109.150351	WG309461-19	CCB		1		08/11/09 15:03
44	P2.081109.151035	L09080040-02	EFFLUENT/COMP	50/50	1		08/11/09 15:10
45	P2.081109.151714	L09080041-02	CATEGORICAL/COMP	50/50	1		08/11/09 15:17
46	P2.081109.152358	L09080041-04	MANHOLE/COMP	50/50	1		08/11/09 15:23
47	P2.081109.153043	L09080043-01	OUTFALL/COMP.	50/50	1		08/11/09 15:30
48	P2.081109.153721	L09080045-01	NMEFF001/E090/4293	50/50	1		08/11/09 15:37
49	P2.081109.154405	L09080055-01	DRL-Z-SS-1	50/50	1		08/11/09 15:44
50	P2.081109.155046	WG309461-20	CCV		1		08/11/09 15:50
51	P2.081109.155724	WG309461-21	CCB		1		08/11/09 15:57
52	P2.081109.160418	L09080095-01	T1360		100		08/11/09 16:04
53	P2.081109.161052	L09080095-05	P1343	50/50	100		08/11/09 16:10
54	P2.081109.161735	L09080172-02	0908-035-1		100		08/11/09 16:17
55	P2.081109.162415	L09080150-01	MW95-1-0908	50/50	100		08/11/09 16:24
56	P2.081109.163053	WG309352-01	Post Digestion Spike		100	L09080150-01	08/11/09 16:30
57	P2.081109.163735	WG309352-02	Serial Dilution		500	L09080150-01	08/11/09 16:37
58	P2.081109.164416	WG309316-01	Reference Sample		100	L09080150-02	08/11/09 16:44
59	P2.081109.165053	WG309316-04	Matrix Spike	50/50	100	L09080150-02	08/11/09 16:50
60	P2.081109.165737	WG309316-05	Matrix Spike Duplica	50/50	100	L09080150-02	08/11/09 16:57
61	P2.081109.170420	L09080150-05	CLAMW12-0908	50/50	100		08/11/09 17:04
62	P2.081109.171105	WG309461-22	CCV		1		08/11/09 17:11
63	P2.081109.171745	WG309461-23	CCB		1		08/11/09 17:17
64	P2.081109.172424	L09080150-06	DUP-01-0908	50/50	100		08/11/09 17:24
65	P2.081109.173100	L09080150-08	LF1MW04A-0908	50/50	100		08/11/09 17:31
66	P2.081109.173743	L09080150-09	MW92-2-0908	50/50	100		08/11/09 17:37
67	P2.081109.174423	L09080150-10	LF7MW04-0908	50/50	100		08/11/09 17:44
68	P2.081109.175057	L09080150-11	LF1MW01B-0908	50/50	100		08/11/09 17:50
69	P2.081109.175738	L09080150-12	GPMW08-0908	50/50	100		08/11/09 17:57
70	P2.081109.180421	L09080158-08	RW-1	50/50	2		08/11/09 18:04
71	P2.081109.181103	L09080158-11	GM-5B	50/50	2		08/11/09 18:11
72	P2.081109.181741	WG309461-24	CCV		1		08/11/09 18:17
73	P2.081109.182420	WG309461-25	CCB		1		08/11/09 18:24

Page: 2 Approved: August 12, 2009

Maren Berry

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument:	PE-ICP2	Dataset:	081109HR.CSV		
Analyst1:	PDM	Analyst2:	N/A		
Method:	6010B	SOP:	ME600E	Rev:	10
Maintenance Log ID:	29751				

Calibration Std:	STD34504	ICV/CCV Std:	STD34469	Post Spike:	STD34340
ICSA:	STD34193	ICSAB:	STD34508	Int. Std:	STD34564

Workgroups: 309405,308987,309378,309352

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time

Comments

Seq.	Rerun	Dil.	Reason	Analytes
52			Sample was re-analyzed unnecessarily therefore no results were reported.	
54			Sample was re-analyzed unnecessarily therefore no results were reported.	

Page: 3 Approved: August 12, 2009

Maren Berry

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Data Checklist

Date: 11-AUG-2009
Analyst: PDM
Analyst: NA
Method: 6010B
Instrument: PE-ICP2
Curve Workgroup: 309461
Runlog ID: 29572
Analytical Workgroups: 309405,308987,309378,309352

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	0144,0171,0178,0041,0045,0095,0150
	0158
Client Forms	X
Level X	
Level 3	0178
Level 4	0144,0171,0150
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	PDM
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
12-AUG-2009
Pierce Morris

Secondary Reviewer:
12-AUG-2009
Maren Beery

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-12-2009 13:14:07

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00083293

Analytical Method: 6010B AAB#: WG309405

Login Number: L09080178

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRDS02	01	08/07/09	08/10/09	3			08/11/09	3.7	180		08/11/09	1	180	
PRDS03	02	08/07/09	08/10/09	3			08/11/09	3.7	180		08/11/09	1	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1463530
Report generated 08/11/2009 15:27

METHOD BLANK SUMMARY

Login Number:	L09080178	Work Group:	WG309405
Blank File ID:	P2.081109.113912	Blank Sample ID:	WG309389-02
Prep Date:	08/11/09 07:13	Instrument ID:	PE-ICP2
Analyzed Date:	08/11/09 11:39	Method:	6010B
Analyst:	PDM		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309389-03	P2.081109.114546	08/11/09 11:45	01
PRDS02	L09080178-01	P2.081109.121909	08/11/09 12:19	01
PRDS03	L09080178-02	P2.081109.122546	08/11/09 12:25	01

Report Name: BLANK_SUMMARY
PDF File ID: 1463531
Report generated 08/11/2009 15:27

Microbac Laboratories Inc.

METHOD BLANK REPORT

00083295

Login Number:L09080178 Prep Date:08/11/09 07:13 Sample ID:WG309389-02
Instrument ID:PE-ICP2 Run Date:08/11/09 11:39 Prep Method:3015
File ID:P2.081109.113912 Analyst:PDM Method:6010B
Workgroup (AAB#):WG309405 Matrix:Leachate Units:mg/L
Contract #:DACA56-94-D-0020 Cal ID:PE-ICP-11-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Arsenic, TCLP	0.100	1.00	0.100	1	U
Barium, TCLP	0.0250	0.100	-0.0356	1	U
Cadmium, TCLP	0.0250	0.100	0.0250	1	U
Chromium, TCLP	0.0250	0.200	0.0250	1	U
Lead, TCLP	0.100	1.00	0.100	1	U
Selenium, TCLP	0.400	0.800	0.400	1	U
Silver, TCLP	0.0500	0.100	0.0500	1	U

SDL Method Detection Limit
PQL Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > RL

Report Name:BLANK
PDF ID: 1463532
11-AUG-2009 15:27

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00083296

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309389-03
Instrument ID: PE-ICP2 Run Time: 11:45 Prep Method: 3015
File ID: P2.081109.114546 Analyst: PDM Method: 6010B
Workgroup (AAB#): WG309405 Matrix: Leachate Units: mg/L
QC Key: STD Lot#: STD34340 Cal ID: PE-ICP-11-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Arsenic, TCLP	2.00	2.09	105	85 - 115	
Barium, TCLP	5.00	5.19	104	85 - 115	
Cadmium, TCLP	0.250	0.257	103	85 - 115	
Chromium, TCLP	2.50	2.55	102	85 - 115	
Lead, TCLP	2.50	2.49	99.5	85 - 115	
Selenium, TCLP	2.00	2.05	102	85 - 115	
Silver, TCLP	2.00	2.15	107	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 1463533
Report generated: 08/11/2009 15:27

Loginnum:L09080178 Cal ID: PE-ICP2- Worknum:WG309405
Instrument ID:PE-ICP2 Contract #:DACA56-94-D-0020 Method:6010B
Parent ID:WG309389-01 File ID:P2.081109.122546 Dil:1 Matrix:WATER
Sample ID:WG309389-04 MS File ID:P2.081109.123230 Dil:1 Units:mg/L
Sample ID:WG309389-05 MSD File ID:P2.081109.123914 Dil:1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Arsenic, TCLP	ND	2.00	1.96	97.8	2.00	1.97	98.6	0.836	80 - 120	20	
Barium, TCLP	1.47	5.00	6.65	104	5.00	6.66	104	0.251	80 - 120	20	
Cadmium, TCLP	ND	0.250	0.245	98.2	0.250	0.247	98.6	0.459	80 - 120	20	
Chromium, TCLP	ND	2.50	2.58	103	2.50	2.59	104	0.154	80 - 120	20	
Lead, TCLP	0.574	2.50	3.09	100	2.50	3.04	98.7	1.44	80 - 120	20	
Selenium, TCLP	ND	2.00	2.05	103	2.00	1.98	99.1	3.41	80 - 120	20	
Silver, TCLP	ND	2.00	2.04	102	2.00	2.06	103	0.930	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

WG_MS_MSD_DRYWT - Modified 03/07/2008
PDF File ID:1463534
Report generated 08/11/2009 15:27

Microbac Laboratories Inc.
Serial Dilution Report

Login: L09080178 **Worknum:** WG309405
Instrument: PE-ICP2 **Method:** 6010B
Serial Dil: WG309405-02 **File ID:** P2.081109.121229 **Dil:** 5 **Units:** mg/L
Sample: L09080144-01 **File ID:** P2.081109.115908 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Arsenic	ND	U	ND	U		
Barium	.106	X	.0925	X	12.70	
Cadmium	ND	U	ND	U		
Chromium	ND	U	ND	U		
Lead	.226	X	.2325	F	2.88	
Selenium	ND	U	ND	U		
Silver	ND	U	ND	U		

U = Result is below MDL.
F = Result is greater than or equal to MDL and less than the RL.
X = Result is greater than or equal to RL and less than 50 times the MDL.
E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 50 times the MDL.

SERIAL_DIL - Modified 09/22/2008
PDF File ID: 1463528
08/11/2009 15:27

Sample Login ID: L09080178 **Worknum:** WG309405
Instrument ID: PE-ICP2 **Method:** 6010B
Post Spike ID: WG309405-01 **File ID:** P2.081109.120544 **Dil:** 1 **Units:** mg/L
Sample ID: L09080144-01 **File ID:** P2.081109.115908 **Dil:** 1 **Matrix:** Leachate

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
ARSENIC	0.199		0	U	.2	99.4	75 - 125	
BARIUM	0.620		0.106		.5	104.9	75 - 125	
CADMIUM	0.0246		0	U	.025	98.5	75 - 125	
CHROMIUM	0.257		0	U	.25	102.9	75 - 125	
LEAD	0.456		0.226		.25	101.1	75 - 125	
SELENIUM	0.196		0	U	.2	98.2	75 - 125	
SILVER	0.206		0	U	.2	103.1	75 - 125	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1463529
Report generated: 08/11/2009 15:27

Microbac Laboratories Inc.
Initial Calibration Summary

00083300

Login:	**L09080178**	Workgroup (AAB#):	**WG309405**
Analytical Method:	**6010B**	Instrument ID:	**PE-ICP2**
ICAL Worknum:	**WG309461**	Initial Calibration Date:	**11-AUG-2009 09:58**

	WG309461-01		WG309461-02		WG309461-03		WG309461-04		WG309461-05			
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT	R	Q
ARSENIC	0	-2.12	NA	NA	.008	3.25	.4	118	.8	235	.999995	
BARIUM	0	-111	.01	526	.02	1080	1	52900	2	103000	.999925	
CADMIUM	0	19.6	.0005	12.0	.001	31.2	.05	1150	.1	2250	.999949	
CHROMIUM	0	38.9	.005	124	.01	259	.5	12900	1	25100	.999941	
LEAD	0	29.2	.005	6.47	.01	26.0	.5	1050	1	2110	.99999	
SELENIUM	0	-3.39	NA	NA	.008	3.30	.4	60.1	.8	120	.999872	
SILVER	0	42.8	.004	347	.008	672	.4	29500	.8	56700	.999827	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
*** = Out of Compliance; R < 0.995**

INT_CAL_ICP - Modified 03/06/2008
PDF File ID: 1463537
Report generated: 11-AUG-2009 15:27

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309461-07
Instrument ID: PE-ICP2 Run Time: 10:11 Method: 6010B
File ID: P2.081109.101104 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309405 Cal ID: PE-ICP2 - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
ARSENIC	.01	.1	.01	U
BARIUM	.0025	.01	.0025	U
CADMIUM	.0025	.01	.0025	U
CHROMIUM	.0025	.02	.0025	U
LEAD	.01	.1	.01	U
SELENIUM	.04	.08	.04	U
SILVER	.005	.01	.005	U

ICB - Modified 07/14/2009
PDF File ID: 1463539
Report generated 08/11/2009 15:27

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083302

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309461-11
Instrument ID: PE-ICP2 Run Time: 10:35 Method: 6010B
File ID: P2.081109.103541 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	-0.00331	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463542
Report generated 08/11/2009 15:27

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083303

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309461-13
Instrument ID: PE-ICP2 Run Time: 11:31 Method: 6010B
File ID: P2.081109.113126 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	-0.00340	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463542
Report generated 08/11/2009 15:27

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083304

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309461-15
Instrument ID: PE-ICP2 Run Time: 12:52 Method: 6010B
File ID: P2.081109.125240 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Arsenic	0.0100	0.100	0.0100	U
Barium	0.00250	0.0100	-0.00344	U
Cadmium	0.00250	0.0100	0.00250	U
Chromium	0.00250	0.0200	0.00250	U
Lead	0.0100	0.100	0.0100	U
Selenium	0.0400	0.0800	0.0400	U
Silver	0.00500	0.0100	0.00500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463542
Report generated 08/11/2009 15:27

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00083305

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309461-06
Instrument ID: PE-ICP2 Run Time: 10:04 Method: 6010B
File ID: P2.081109.100423 Analyst: PDM Units: mg/L
Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Arsenic		.4	0.405	101	90 - 110	
Barium		1	1.02	102	90 - 110	
Cadmium		.05	0.0500	100	90 - 110	
Chromium		.5	0.506	101	90 - 110	
Lead		.5	0.499	99.8	90 - 110	
Selenium		.4	0.401	100	90 - 110	
Silver		.4	0.411	103	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1463538
Report generated 08/11/2009 15:27

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083306

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309461-10
Instrument ID: PE-ICP2 Run Time: 10:29 Method: 6010B
File ID: P2.081109.102903 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.406	mg/L	102	90 - 110		
Barium		1.00	1.02	mg/L	102	90 - 110		
Cadmium		0.0500	0.0501	mg/L	100	90 - 110		
Chromium		0.500	0.506	mg/L	101	90 - 110		
Lead		0.500	0.498	mg/L	99.5	90 - 110		
Selenium		0.400	0.417	mg/L	104	90 - 110		
Silver		0.400	0.412	mg/L	103	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463541
Report generated 08/11/2009 15:27

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00083307

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309461-12

Instrument ID: PE-ICP2 Run Time: 11:24 Method: 6010B

File ID: P2.081109.112442 Analyst: PDM QC Key: STD

Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09

Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.400	mg/L	100	90 - 110		
Barium		1.00	0.996	mg/L	99.6	90 - 110		
Cadmium		0.0500	0.0490	mg/L	98.0	90 - 110		
Chromium		0.500	0.495	mg/L	99.0	90 - 110		
Lead		0.500	0.486	mg/L	97.3	90 - 110		
Selenium		0.400	0.410	mg/L	102	90 - 110		
Silver		0.400	0.401	mg/L	100	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1463541

Report generated 08/11/2009 15:27

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083308

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309461-14
Instrument ID: PE-ICP2 Run Time: 12:46 Method: 6010B
File ID: P2.081109.124600 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309405 Cal ID: PE-ICP - 11-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Arsenic		0.400	0.394	mg/L	98.6	90 - 110		
Barium		1.00	0.997	mg/L	99.7	90 - 110		
Cadmium		0.0500	0.0496	mg/L	99.3	90 - 110		
Chromium		0.500	0.498	mg/L	99.5	90 - 110		
Lead		0.500	0.490	mg/L	98.0	90 - 110		
Selenium		0.400	0.420	mg/L	105	90 - 110		
Silver		0.400	0.407	mg/L	102	90 - 110		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463541
Report generated 08/11/2009 15:27

Login number: L09080178 **Workgroup (AAB#):** WG309405
Instrument ID: PE-ICP2 **Method:** 6010B
Sol. A : WG309461-08 **File ID:** P2.081109.101742 **Units:** mg/L
Sol. AB : WG309461-09 **File ID:** P2.081109.102322 **Matrix:** Leachate

	Sol. A			Sol. AB			
ANALYTE	True	Found	%Recovery	True	Found	%Recovery	Q
Arsenic	NS	-0.0000100	NS	0.250	0.253	101	
Barium	NS	-0.000760	NS	0.250	0.258	103	
Cadmium	NS	-0.0000400	NS	0.500	0.450	90.0	
Chromium	NS	-0.000900	NS	0.250	0.252	101	
Lead	NS	-0.0000200	NS	0.500	0.491	98.2	
Selenium	NS	0.0000400	NS	0.250	0.255	102	
Silver	NS	-0.000130	NS	0.500	0.514	103	

NS = Not spiked
*** = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.**
 # = Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

Login Number: L09080178 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	AG	AL	AS	B	BA
ALUMINUM	396.15	0	0	0.206	0	0
ANTIMONY	206.84	0	0	-0.740	0	0
ARSENIC	188.98	0	-0.00216	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	-0.370	0.0414	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	-1.07
COPPER	327.39	0	0	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	0	-0.107	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0	0	0	0
MANGANESE	257.61	-0.185	0	-0.231	-0.0949	-0.230
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.207	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0.200	0	0.0400
ZINC	206.20	0	0.0753	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463536
Report generated: 08/11/2009 15:27

Login Number: L09080178 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	BE	CA	CD	CO	CR
ALUMINUM	396.15	0	0.274	0	0	0
ANTIMONY	206.84	0	0	0	0	19.8
ARSENIC	188.98	0	-0.00673	-0.0875	0	-2.91
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	-0.0105
BORON	249.68	0	0	50.1	3.51	1.50
CADMIUM	228.80	0	0	0	-5.41	0
CALCIUM	227.55	0	0	0	126	-21.8
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0.156
COPPER	327.39	0	0	0	0.380	-0.0467
IRON	239.56	0	0.0227	0	1.91	0.331
LEAD	220.35	0	-0.0247	0	0.666	-0.0700
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.638	0	0	0
MANGANESE	257.61	-1.04	0.0280	-0.755	-0.0418	-0.110
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	0	0	0	0.623	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0.0190	0	-0.633	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	-0.0100	0	0.953	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	-0.0233	0	0	0.297
VANADIUM	290.88	0	-0.00100	0	0	0
ZINC	206.20	0	-0.0333	15.3	0	-7.08

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463536
Report generated: 08/11/2009 15:27

Login Number: L09080178 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	CU	FE	K	LI	MG
ALUMINUM	396.15	0	0.108	0	0	0
ANTIMONY	206.84	0	0	0	0	0
ARSENIC	188.98	0	0.00251	0	0	0
BARIUM	233.53	0	0.0520	0	0	0
BERYLLIUM	234.86	0	0.152	0	0	0
BORON	249.68	0	-4.02	0	0	0
CADMIUM	228.80	0	-0.00274	0	0	0
CALCIUM	227.55	-2.44	-4.01	0	0	0.104
CHROMIUM	267.72	0	-0.0239	0	0	0
COBALT	228.62	0	0.00949	0	0	0
COPPER	327.39	0	-0.0851	0	0.154	0.0143
IRON	239.56	0	0	0	0	0.0276
LEAD	220.35	0.551	0.103	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	0.174	0	0	0
MANGANESE	257.61	-0.0457	-0.156	-0.0181	-0.794	0.0147
MOLYBDENUM	202.03	0	-0.0494	0	0	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	-0.0451	0	0	0
SELENIUM	196.03	0	-1.01	0	0	-0.0113
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0.0717	-0.00209	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0.138	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0.0715	0	0	-0.0400
ZINC	206.20	-0.200	-0.0563	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463536
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Login Number: L09080178 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	MN	MO	NA	NI	PB
ALUMINUM	396.15	0	32.9	0	0	0
ANTIMONY	206.84	0	-17.4	0	0	0
ARSENIC	188.98	0	3.66	0	0	0
BARIUM	233.53	0	-0.548	0	0	0
BERYLLIUM	234.86	-0.131	-0.529	0	-0.00974	0
BORON	249.68	0	-2.08	0	0	0
CADMIUM	228.80	0	0.0112	0	-0.0299	0
CALCIUM	227.55	0	-18.6	0	-1090	0
CHROMIUM	267.72	0.434	-0.00100	0	0	0
COBALT	228.62	0	-0.835	0	0.129	0
COPPER	327.39	0.136	-0.0774	0	0.150	0.257
IRON	239.56	0.480	0	0	0	0.407
LEAD	220.35	0.0756	-2.50	0	-0.174	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-5.58	0	0	0.0252
MANGANESE	257.61	0	-0.0482	-0.00916	-0.0340	-0.0413
MOLYBDENUM	202.03	-0.209	0	0	0.120	0
NICKEL	231.60	0	0	0	0	0
POTASSIUM	766.49	0	0	1.00	0	0
SELENIUM	196.03	0.451	0.199	0	0.0799	0
SILICON	251.61	0	12.9	0	0	0
SILVER	328.07	0.130	0.0781	0	0	0
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	-0.00100	1.20	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0.578	0	0	0
ZINC	206.20	0	0.180	0	-0.200	-0.100

CORR_FACTORS - Modified 03/05/2008
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Report generated: 08/11/2009 15:27

Login Number: L09080178 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	SB	SE	SI	SN	SR
ALUMINUM	396.15	0	0	0	0	0
ANTIMONY	206.84	0	0	0	-10.6	0
ARSENIC	188.98	0	0	0	0	0
BARIUM	233.53	0	0	0	0	0
BERYLLIUM	234.86	0	0	0	0	0
BORON	249.68	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	227.55	0	0	2.79	0	0
CHROMIUM	267.72	0	0	0	0	0
COBALT	228.62	0	0	0	0	0
COPPER	327.39	0	0.148	0	0	0
IRON	239.56	0	0	0	0	0
LEAD	220.35	-0.0100	0	0	0	0
LITHIUM	670.78	0	0	0	0	0
MAGNESIUM	279.08	0	-0.0924	0	0	0
MANGANESE	257.61	-0.0505	-0.0281	-0.185	-0.0445	-0.625
MOLYBDENUM	202.03	0	0	0	0	0
NICKEL	231.60	-0.0500	-0.0100	0	0	0
POTASSIUM	766.49	0	0	0	0	0
SELENIUM	196.03	0	0	0	0	0
SILICON	251.61	0	0	0	0	0
SILVER	328.07	0	0	0	0	0.200
SODIUM	589.59	0	0	0	0	0
STRONTIUM	407.77	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.93	0	0	0	0	0
TITANIUM	334.94	0	0	0	0	0
VANADIUM	290.88	0	0	0	0	0
ZINC	206.20	-0.300	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463536
Report generated: 08/11/2009 15:27

Login Number: L09080178 **Date:** 02/02/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Wave Length	TI	TL	V	ZN
ALUMINUM	396.15	0	0	0	0
ANTIMONY	206.84	0	0	-3.59	0
ARSENIC	188.98	0	0	0.0930	0
BARIUM	233.53	0	0	-1.83	0
BERYLLIUM	234.86	0	0	0	0
BORON	249.68	0	0	0	0
CADMIUM	228.80	0	0	0.0940	0
CALCIUM	227.55	0	0	19.1	0
CHROMIUM	267.72	0	0	-0.567	-0.0400
COBALT	228.62	2.21	0	0	0
COPPER	327.39	-1.05	0	-0.603	0
IRON	239.56	0	0	0	-0.0613
LEAD	220.35	-0.441	0	-0.150	0
LITHIUM	670.78	0	0	0	0
MAGNESIUM	279.08	0	0	-0.0280	0
MANGANESE	257.61	-0.00931	-0.0414	-0.0601	-0.0553
MOLYBDENUM	202.03	0	0	-0.288	0
NICKEL	231.60	0	0.617	0	0
POTASSIUM	766.49	0	0	0	0
SELENIUM	196.03	-0.220	0	0.823	0
SILICON	251.61	0	0	0	0
SILVER	328.07	0	0	-5.47	0
SODIUM	589.59	0	0	0	0
STRONTIUM	407.77	0	0	0	0
THALLIUM	190.80	-4.00	0	0	0
TIN	189.93	0	0	0	0
TITANIUM	334.94	0	0	0	0
VANADIUM	290.88	0	0	0	0
ZINC	206.20	0	0	-0.100	0

CORR_FACTORS - Modified 03/05/2008
PDF File ID: 1463536
Report generated: 08/11/2009 15:27

Login Number: L09080178 **Date:** 06/30/2009
Insturment ID: PE-ICP2 **Method:** 6010B

Analyte	Integration Time (Sec.)	Concentration (mg/L)
Aluminum	10.00	450.0
Antimony	10.00	45.0
Arsenic	10.00	9.0
Barium	10.00	9.0
Beryllium	10.00	4.5
Boron	10.00	45.0
Cadmium	10.00	9.0
Calcium	10.00	450.0
Chromium	10.00	45.0
Cobalt	10.00	45.0
Copper	10.00	45.0
Iron	10.00	450.0
Lead	10.00	90.0
Lithium	10.00	0.8
Magnesium	10.00	450.0
Manganese	10.00	27.0
Molybdenum	10.00	45.0
Nickel	10.00	45.0
Potassium	10.00	90.0
Selenium	10.00	45.0
Silicon	10.00	36.0
Silver	10.00	4.5
Sodium	10.00	180.0
Strontium	10.00	4.5
Thallium	10.00	45.0
Tin	10.00	45.0
Titanium	10.00	45.0
Vanadium	10.00	45.0
Zinc	10.00	45.0

Comments:
All analytes passed acceptance criteria at the specified concentration.

LINEAR_RANGE - Modified 03/06/2008
PDF File ID: 1463535
Report generated: 08/11/2009 15:27

2.2.2 Metals CVAA Data (Mercury)

2.2.2.1 Summary Data

LABORATORY REPORT

00083319

L09080178

08/12/09 14:33

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS02	L09080178-01	7470A	1	08-AUG-09
PRDS03	L09080178-02	7470A	1	08-AUG-09

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083320

Sample Number:	L09080178-01	PrePrep Method:	1311	Instrument:	HYDRA
Client ID:	PRDS02	Prep Method:	7470A	Prep Date:	08/11/2009 11:25
Matrix:	Leachate	Analytical Method:	7470A	Cal Date:	08/11/2009 13:15
Workgroup Number:	WG309448	Analyst:	PDM	Run Date:	08/11/2009 13:49
Collect Date:	08/07/2009 14:15	Dilution:	1	File ID:	HY.081109.134910
Sample Tag:	01	Units:	mg/L		

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083321

Sample Number:	L09080178-02	PrePrep Method:	1311	Instrument:	HYDRA
Client ID:	PRDS03	Prep Method:	7470A	Prep Date:	08/11/2009 11:25
Matrix:	Leachate	Analytical Method:	7470A	Cal Date:	08/11/2009 13:17
Workgroup Number:	WG309448	Analyst:	PDM	Run Date:	08/11/2009 13:50
Collect Date:	08/07/2009 14:30	Dilution:	1	File ID:	HY.081109.135053
Sample Tag:	01	Units:	mg/L		

Analyte	CAS.Number	Result	Qual	PQL	SDL	EPA HW#	Reg. Limit
Mercury	7439-97-6		U	.002	.001	D009	.2

U Not detected at or above adjusted sample detection limit

2.2.2.2 QC Summary Data

Example Cold Vapor Mercury Calculations
Hydra AA Mercury Analyzer

1.0 Initial Calibration (ICAL) Parameters
The system performs linear regression from data consisting of a blank and five standards.

2.0 Calculating the concentration (C) of an element in water using data from run log and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to Volume (mL)	40
Vi = Aliquot Volume (mL)	40
D = Manual dilution factor, if required (10X = 10)	1
Cx = Concentration of element in ppb (ug/L)	0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Ws} \times D$$

Where:	**Example:**
Cs = Concentration computed by the data system (ug/L)	0.1
Vf = Diluted to volume (mL)	40
Ws = Aliquot weight (g)	0.6
D = Manual dilution factor	1
Cx = Concentration of element in ug/kg	6.67

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

1 Cx = Concentration calculated as received (wet basis)	6.67
Px = Percent solids of sample (%wt)	80
$Cdry$ = Concentration calculated as dry weight (ug/kg)	8.33

8.33 ug/kg = 0.00833 mg/kg

TCLP Non-Volatile

Analyst(s): Ruc
Date: 08-10-09

Analyst/Date		Analyst/Date	
Ruc 8-10-09		Ruc 8-11-09	
Time On	Temp On °C	Time Off	Temp Off °C
1330	24	0630	23

Jug #	Sample #	Tests	Method	Fluid #	Matrix*	%Solid	Size Reduction Yes	Size Reduction No	Int. Wt. (g)	Fluid Vol. (mL)
D	08-144-01	ME	1311	FF758	S/S	100		✓	100.07	2000
D	08-149-03				S		✓		100.08	
D	05						✓		100.01	
D	08-154-01						✓		100.04	
D	08-171-01							✓	100.02	
D	02							✓	100.00	
D	08-178-01				S/S			✓	100.06	
D	02				1			✓	100.05	
N/A	FBLK				N/A	N/A		✓	2000	
2	08-149-04			Filtered	W	2.5		✓	100	100

Ruc 8-10-09

*Matrix Code = (S-solid) (SS-sand, soil or sludge) (P-paint) (O-organic) (W-water or waste)
Agitator speed is 30 ± 2 rpm unless otherwise noted.

Comments: Filtered SW processed @1300 - Ruc

Peer Review By: _____ Supervisor Review: _____

Microbac Laboratories Inc.
Metals Digest Log

00083325

Workgroup: WG309423
Analyst: BRG
Spike Analyst: BRG
Method: 7470A
Run Date: 08/11/2009 11:25
Hotblock Start Temp: 95.4 @ 08:35
Hotblock End Temp: 98 @ 10:35

SOP: ME404 Revison 12
Spike Solution: STD34575
Spike Witness: VC
HNO3 Lot #: COA13945
KMnO4 1:1 Lot #: RGT13913
H2SO4 Lot #: COA13254
K2S2O8 1:1 Lot #: RGT14066
Digest tubes Lot #: COA14013
Mercury Water ICV Lot #: STD34577
HG H2O STDS 10PPM Lot #: STD34583

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Spike Amount	Due Date
1	WG309423-02	BLANK	1	40 mL	40 mL		
2	WG309362-01	FBLK	17	4 mL	40 mL		
3	WG309423-03	LCS	1	40 mL	40 mL	4 mL	
4	L09080144-01	SAMP	17	4 mL	40 mL		08/11/09
5	L09080149-03	SAMP	17	4 mL	40 mL		08/17/09
6	L09080149-04	SAMP	17	4 mL	40 mL		08/17/09
7	L09080149-05	SAMP	17	4 mL	40 mL		08/17/09
8	L09080150-01	SAMP	1	40 mL	40 mL		08/18/09
9	WG309423-01	REF	1	40 mL	40 mL		
10	L09080150-02	RS01	1	40 mL	40 mL		08/18/09
11	WG309423-04	MS	1	40 mL	40 mL	4 mL	
12	L09080150-03	MS01	1	40 mL	40 mL	4 mL	08/18/09
13	WG309423-05	MSD	1	40 mL	40 mL	4 mL	
14	L09080150-04	SD01	1	40 mL	40 mL	4 mL	08/18/09
15	L09080150-05	SAMP	1	40 mL	40 mL		08/18/09
16	L09080150-06	SAMP	1	40 mL	40 mL		08/18/09
17	L09080150-08	SAMP	1	40 mL	40 mL		08/18/09
18	L09080150-09	SAMP	1	40 mL	40 mL		08/18/09
19	L09080150-10	SAMP	1	40 mL	40 mL		08/18/09
20	L09080150-11	SAMP	1	40 mL	40 mL		08/18/09
21	L09080150-12	SAMP	1	40 mL	40 mL		08/18/09
22	L09080154-01	SAMP	17	4 mL	40 mL		08/17/09
23	L09080171-01	SAMP	17	4 mL	40 mL		08/14/09
24	L09080171-02	SAMP	17	4 mL	40 mL		08/14/09
25	L09080178-01	SAMP	17	4 mL	40 mL		08/11/09
26	L09080178-02	SAMP	17	4 mL	40 mL		08/11/09
27	L09080180-01	SAMP	1	40 mL	40 mL		08/21/09

Analyst: Brenda Gregory

Reviewer: Erin Potter

BLOCK_DIG - Modified 07/22/2008
PDF ID: 1463084
Report generated: 08/11/2009 11:27

Microbac®

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HYDRA Dataset: 081109A.PRN
Analyst1: PDM Analyst2: N/A
Method: 7470A SOP: ME404 Rev: 11
Maintenance Log ID: 29752

Calibration Std: STD34583 ICV/CCV Std: STD34577 Post Spike: STD34583
ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 309448

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	HY.081109.130956	WG309466-01	Calibration Point		1		08/11/09 13:09
2	HY.081109.131322	WG309466-02	Calibration Point		1		08/11/09 13:13
3	HY.081109.131527	WG309466-03	Calibration Point		1		08/11/09 13:15
4	HY.081109.131723	WG309466-04	Calibration Point		1		08/11/09 13:17
5	HY.081109.131911	WG309466-05	Calibration Point		1		08/11/09 13:19
6	HY.081109.132110	WG309466-06	Calibration Point		1		08/11/09 13:21
7	HY.081109.132255	WG309466-07	Initial Calibration Verification		1		08/11/09 13:22
8	HY.081109.132439	WG309466-08	Initial Calibration Verification		1		08/11/09 13:24
9	HY.081109.132622	WG309466-09	Initial Calib Blank		1		08/11/09 13:26
10	HY.081109.132807	WG309466-10	CCV		1		08/11/09 13:28
11	HY.081109.133012	WG309466-11	CCB		1		08/11/09 13:30
12	HY.081109.133153	WG309423-02	Method/Prep Blank	40/40	1		08/11/09 13:31
13	HY.081109.133511	WG309423-03	Laboratory Control S	40/40	1		08/11/09 13:35
14	HY.081109.133713	WG309362-01	Fluid Blank		1		08/11/09 13:37
15	HY.081109.133918	L09080144-01	PRDS01	4/40	1		08/11/09 13:39
16	HY.081109.134151	WG309448-01	Post Digestion Spike		1	L09080144-01	08/11/09 13:41
17	HY.081109.134715	WG309448-01	Post Digestion Spike		1	L09080144-01	08/11/09 13:47
18	HY.081109.134910	L09080178-01	PRDS02	4/40	1		08/11/09 13:49
19	HY.081109.135053	L09080178-02	PRDS03	4/40	1		08/11/09 13:50
20	HY.081109.135236	L09080149-03	GT090086	4/40	1		08/11/09 13:52
21	HY.081109.135504	L09080149-04	GT090087	4/40	1		08/11/09 13:55
22	HY.081109.135652	WG309466-12	CCV		1		08/11/09 13:56
23	HY.081109.135858	WG309466-13	CCB		1		08/11/09 13:58
24	HY.081109.140112	L09080419-05	0908041905		1		08/11/09 14:01
25	HY.081109.140310	L09080150-01	MW95-1-0908		1		08/11/09 14:03
26	HY.081109.140455	WG309448-02	Post Digestion Spike		1	L09080150-01	08/11/09 14:04
27	HY.081109.140636	L09080450-02	0908045002		1		08/11/09 14:06
28	HY.081109.141414	L09080450-03	0908045003		1		08/11/09 14:14
29	HY.081109.141731	WG309466-14	CCV		1		08/11/09 14:17
30	HY.081109.141946	WG309466-15	CCB		1		08/11/09 14:19
31	HY.081109.142144	L09080149-05	GT090088	4/40	1		08/11/09 14:21
32	HY.081109.142438	L09080150-01	MW95-1-0908	40/40	1		08/11/09 14:24
33	HY.081109.142635	L09080150-02	MW95-2-0908		1	WG309423-01	08/11/09 14:26
34	HY.081109.142912	L09080150-03	MW95-2-0908-MS		1	WG309423-04	08/11/09 14:29
35	HY.081109.143104	L09080150-04	MW95-2-0908-MSD		1	WG309423-05	08/11/09 14:31
36	HY.081109.143306	L09080150-05	CLAMW12-0908	40/40	1		08/11/09 14:33
37	HY.081109.143448	WG309448-02	Post Digestion Spike		1	L09080150-01	08/11/09 14:34

Page: 1 Approved: August 11, 2009

Maren Berry

Microbac

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HYDRA Dataset: 081109A.PRN
Analyst1: PDM Analyst2: N/A
Method: 7470A SOP: ME404 Rev: 11
Maintenance Log ID: 29752

Calibration Std: STD34583 ICV/CCV Std: STD34577 Post Spike: STD34583
ICSA: N/A ICSAB: N/A Int. Std:

Workgroups: 309448

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
38	HY.081109.143736	L09080150-06	DUP-01-0908	40/40	1		08/11/09 14:37
39	HY.081109.143920	L09080150-08	LF1MW04A-0908	40/40	1		08/11/09 14:39
40	HY.081109.144105	L09080150-09	MW92-2-0908	40/40	1		08/11/09 14:41
41	HY.081109.144312	WG309466-16	CCV		1		08/11/09 14:43
42	HY.081109.144527	WG309466-17	CCB		1		08/11/09 14:45
43	HY.081109.144714	L09080150-10	LF7MW04-0908	40/40	1		08/11/09 14:47
44	HY.081109.144920	L09080150-11	LF1MW01B-0908	40/40	1		08/11/09 14:49
45	HY.081109.145126	L09080150-12	GPMW08-0908	40/40	1		08/11/09 14:51
46	HY.081109.145318	L09080154-01	GM090046	4/40	1		08/11/09 14:53
47	HY.081109.145502	L09080171-01	TANK \#2 - 1		1		08/11/09 14:55
48	HY.081109.145645	L09080171-02	TANK \#2 - 2		1		08/11/09 14:56
49	HY.081109.145828	L09080180-01	LFD02-0908	40/40	1		08/11/09 14:58
50	HY.081109.150010	WG309466-18	CCV		1		08/11/09 15:00
51	HY.081109.150154	WG309466-19	CCB		1		08/11/09 15:01

Approved: August 11, 2009
Maren Berry

Microbac Laboratories Inc.

00083328

Data Checklist

Date: 11-AUG-2009

Analyst: PDM

Analyst: NA

Method: 7470A

Instrument: HYDRA

Curve Workgroup: 309466

Runlog ID: 29571

Analytical Workgroups: 309448

Calibration/Linearity	X
ICV/CCV	X
ICB/CCB	X
ICSA/ICSAB	
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	144, 178
Level 4	150, 180
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KHR
Secondary Reviewer	MMB
Comments	

Primary Reviewer:
11-AUG-2009

Secondary Reviewer:
11-AUG-2009

CHECKLIST1 - Modified 03/05/2008

Generated: AUG-11-2009 19:04:45

Microbac Laboratories Inc.

HOLDING TIMES
EQUIVALENT TO AFCEE FORM 9

00083329

Analytical Method: 7470A AAB#: WG309448

Login Number: L09080178

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
PRDS02	01	08/07/09	08/10/09	3			08/11/09	3.9	28		08/11/09	1	28	
PRDS03	02	08/07/09	08/10/09	3			08/11/09	3.9	28		08/11/09	1	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 1463624
Report generated 08/11/2009 15:53

METHOD BLANK SUMMARY

Login Number:	L09080178	Work Group:	WG309448
Blank File ID:	HY.081109.133153	Blank Sample ID:	WG309423-02
Prep Date:	08/11/09 11:25	Instrument ID:	HYDRA
Analyzed Date:	08/11/09 13:31	Method:	7470A
Analyst:	PDM		

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG309423-03	HY.081109.133511	08/11/09 13:35	01
PRDS02	L09080178-01	HY.081109.134910	08/11/09 13:49	01
PRDS03	L09080178-02	HY.081109.135053	08/11/09 13:50	01

Report Name: BLANK_SUMMARY
PDF File ID: 1463625
Report generated 08/11/2009 15:53

Microbac Laboratories Inc.

METHOD BLANK REPORT

00083331

Login Number: L09080178 Prep Date: 08/11/09 11:25 Sample ID: WG309423-02

Instrument ID: HYDRA Run Date: 08/11/09 13:31 Prep Method: 7470A

File ID: HY.081109.133153 Analyst: PDM Method: 7470A

Workgroup (AAB#): WG309448 Matrix: Leachate Units: mg/L

Contract #: DACA56-94-D-0020 Cal ID: HYDRA-11-AUG-09

Analytes	SDL	PQL	Concentration	Dilution	Qualifier
Mercury	0.000100	0.000200	-0.000114	1	U

SDL Method Detection Limit

PQL Reporting/Practical Quantitation Limit

ND Analyte Not detected at or above reporting limit

* |Analyte concentration| > RL

Report Name:BLANK

PDF ID: 1463626

11-AUG-2009 15:53

Microbac Laboratories Inc.
LABORATORY CONTROL SAMPLE (LCS)

00083332

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309423-03
Instrument ID: HYDRA Run Time: 13:35 Prep Method: 7470A
File ID: HY.081109.133511 Analyst: PDM Method: 7470A
Workgroup (AAB#): WG309448 Matrix: Leachate Units: mg/L
QC Key: STD Lot#: STD34575 Cal ID: HYDRA-11-AUG-09

Analytes	Expected	Found	% Rec	LCS Limits	Q
Mercury	0.00400	0.00417	104	85 - 115	

LCS - Modified 03/06/2008
PDF File ID: 1463627
Report generated: 08/11/2009 15:53

Sample Login ID: L09080178 **Worknum:** WG309448
Instrument ID: HYDRA **Method:** 7470A
Post Spike ID: WG309448-01 **File ID:** HY.081109.134715 **Dil:** 1 **Units:** ug/L
Sample ID: L09080144-01 **File ID:** HY.081109.133918 **Dil:** 1 **Matrix:** Leachate

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
MERCURY	0.869		0	U	1	86.9	85 - 115	

N = % Recovery exceeds control limits
F = Result is between MDL and RL
U = Sample result is below MDL. A value of zero is used in the calculation

POST_SPIKE - Modified 03/06/2008
PDF File ID: 1463623
Report generated: 08/11/2009 15:53

Login Number: L09080178
Analytical Method: 7470A
ICAL Worknum: WG309466

Workgroup (AAB#): WG309448
Instrument ID: HYDRA
Initial Calibration Date: 08/11/2009 13:21

Analyte	WG309466-01		WG309466-02		WG309466-03		WG309466-04		WG309466-05		WG309466-06	
	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT	STD	INT
Mercury	0	-23	0.200	1010	1.00	4047	2.00	7242	5.00	17082	10.0	34505

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1463628
Report generated 08/11/2009 15:53

Microbac Laboratories Inc.

INITIAL CALIBRATION SUMMARY

00083335

Login Number: L09080178
Analytical Method: 7470A
ICAL Worknum: WG309466

Workgroup (AAB#): WG309448
Instrument ID: HYDRA
Initial Calibration Date: 08/11/2009 13:21

Analyte	R	Q
Mercury	1.000	

INT = Instrument intensity
R = Coefficient of correlation
Q = Data Qualifier
* = Out of Compliance; R < 0.995

INT_CAL_HG_FU - Modified 03/06/2008
PDF File ID: 1463628
Report generated 08/11/2009 15:53

Microbac Laboratories Inc.
INITIAL CALIBRATION BLANK (ICB)

00083336

Login Number: L09080178
Instrument ID: HYDRA
File ID: HY.081109.132622
Workgroup (AAB#): WG309448
Matrix: LEACHATE

Run Date: 08/11/2009
Run Time: 13:26
Analyst: PDM
Cal ID: HYDRA - 11-AUG-09

Sample ID: WG309466-09
Method: 7470A
Units: ug/L

Analytes	MDL	RDL	Concentration	Qualifier
MERCURY	.1	.2	.1	U

ICB - Modified 07/14/2009
PDF File ID: 1463630
Report generated 08/11/2009 15:53

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083337

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309466-11
Instrument ID: HYDRA Run Time: 13:30 Method: 7470A
File ID: HY.081109.133012 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	-0.179	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463632
Report generated 08/11/2009 15:53

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083338

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309466-13
Instrument ID: HYDRA Run Time: 13:58 Method: 7470A
File ID: HY.081109.135858 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	-0.104	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463632
Report generated 08/11/2009 15:53

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083339

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309466-15
Instrument ID: HYDRA Run Time: 14:19 Method: 7470A
File ID: HY.081109.141946 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	0.100	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463632
Report generated 08/11/2009 15:53

Microbac Laboratories Inc.
CONTINUING CALIBRATION BLANK (CCB)

00083340

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309466-17
Instrument ID: HYDRA Run Time: 14:45 Method: 7470A
File ID: HY.081109.144527 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analytes	MDL	RDL	Concentration	Qualifier
Mercury	0.100	0.200	-0.109	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 1463632
Report generated 08/11/2009 15:53

Microbac Laboratories Inc.

INITIAL CALIBRATION VERIFICATION (ICV)
(Alternate Source)

00083341

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309466-08
Instrument ID: HYDRA Run Time: 13:24 Method: 7470A
File ID: HY.081109.132439 Analyst: PDM Units: ug/L
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
QC Key: STD

Analyte		Expected	Found	%REC	LIMITS	Q
Mercury		2	1.91	95.5	90 - 110	

* Exceeds LIMITS Limit

ICV - Modified 03/06/2008
PDF File ID: 1463629
Report generated 08/11/2009 15:53

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083342

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309466-10
Instrument ID: HYDRA Run Time: 13:28 Method: 7470A
File ID: HY.081109.132807 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00195	mg/L	97.5	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463631
Report generated 08/11/2009 15:53

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083343

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309466-12
Instrument ID: HYDRA Run Time: 13:56 Method: 7470A
File ID: HY.081109.135652 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00194	mg/L	97.0	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463631
Report generated 08/11/2009 15:53

Microbac Laboratories Inc.

CONTINUING CALIBRATION VERIFICATION (CCV)

00083344

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309466-14

Instrument ID: HYDRA Run Time: 14:17 Method: 7470A

File ID: HY.081109.141731 Analyst: PDM QC Key: STD

Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09

Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00192	mg/L	96.0	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008

PDF File ID: 1463631

Report generated 08/11/2009 15:53

Microbac Laboratories Inc.
CONTINUING CALIBRATION VERIFICATION (CCV)

00083345

Login Number: L09080178 Run Date: 08/11/2009 Sample ID: WG309466-16
Instrument ID: HYDRA Run Time: 14:43 Method: 7470A
File ID: HY.081109.144312 Analyst: PDM QC Key: STD
Workgroup (AAB#): WG309448 Cal ID: HYDRA - 11-AUG-09
Matrix: LEACHATE

Analyte		Expected	Found	UNITS	%REC	LIMITS		Q
Mercury, Total		0.00200	0.00184	mg/L	92.0	80 - 120		

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
PDF File ID: 1463631
Report generated 08/11/2009 15:53

2.3 General Chemistry Data

2.3.1 Percent Solids Data

2.3.1.1 Raw Data

LABORATORY REPORT

00083349

L09080178

08/12/09 14:33

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS02	L09080178-01	D2216-90	1	08-AUG-09
PRDS03	L09080178-02	D2216-90	1	08-AUG-09

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083350

Sample Number: **L09080178-01**
Client ID: **PRDS02**
Matrix: **Soil**
Workgroup Number: **WG309353**
Collect Date: **08/07/2009 14:15**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **JDH**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/11/2009 08:21**
Cal Date:
Run Date: **08/11/2009 08:21**
File ID: **B1.309353-0115**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**84.0**		**1.00**	**1.00**

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083351

Sample Number: **L09080178-02**
Client ID: **PRDS03**
Matrix: **Soil**
Workgroup Number: **WG309353**
Collect Date: **08/07/2009 14:30**
Sample Tag: **01**

PrePrep Method: **NONE**
Prep Method: **D2216-90**
Analytical Method: **D2216-90**
Analyst: **JDH**
Dilution: **1**
Units: **weight %**

Instrument: **BAL001**
Prep Date: **08/11/2009 08:21**
Cal Date:
Run Date: **08/11/2009 08:21**
File ID: **B1.309353-0116**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Percent Solids	**10-02-6**	**84.9**		**1.00**	**1.00**

Example Percent Solids Calculations

1.0 Calculating the percent solids of a sample.

$$\%Solids = \frac{WT3 - WT1}{WT2 - WT1} \times F$$

Where:	
WT1 = Weight, in grams, of the empty container	1.30 g
WT2 = Weight, in grams, of the container and wet sample	21.274 g
WT3 = Weight, in grams, of the container and dried sample	5.21 g
F = Factor to get units as percent weight	100
%Solids = Percent solids present in sample.	19.58%

2.0 Calculating the percent moisture of a sample.

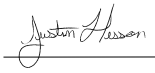
% Moisture = 100 - % Solids from 1.0 calculation

PERCENT SOLIDS

00083353

Workgroup (AAB#): WG309353 Analyst: JDH ADT(on): 08/10/2009 13:20
Method: D2216-90 Instrument: BAL001 ADT(off): 08/11/2009 08:21
SOP: K0003 Rev: 9

SAMPLE NUMBER	EMPTY PAN WT 1	WET WT 2	DRY WT 3A	DRY WT 3B	DRY WT 3C	PERCENT SOLID	PERCENT MOISTURE
L09080141-01	1.31	20.32	20.23			99.53	
L09080141-02	1.31	19.44	19.4			99.78	
L09080141-03	1.31	23.96	23.9			99.74	
L09080141-04	1.31	22.34	22.27			99.67	
L09080141-05	1.31	20.34	20.29			99.74	
L09080141-06	1.31	23.77	23.66			99.51	
L09080141-07	1.31	25.42	25.32			99.59	
L09080141-08	1.31	8.5	8.46			99.44	
L09080141-09	1.31	18.57	18.55			99.88	
L09080142-01	1.31	18.16	18.13			99.82	
L09080142-02	1.31	22.31	22.21			99.52	
L09080142-03	1.31	22.88	22.86			99.91	
L09080142-04	1.31	21.19	21.14			99.75	
L09080142-05	1.31	14.45	14.44			99.92	
L09080142-06	1.31	21.22	21.22			100.0	
L09080176-05	1.3	19.07	15.19			78.17	
L09080176-06	1.31	24.11	20.16			82.68	
L09080176-07	1.33	26.87	22			80.93	
L09080176-08	1.3	26.58	22.26			82.91	
L09080176-09	1.3	28.1	22.78			80.15	
L09080176-10	1.31	24.25	20.21			82.39	
L09080176-11	1.3	20.03	16.86			83.08	
L09080176-12	1.31	24.87	20.85			82.94	
L09080176-13	1.33	22.87	18.96			81.85	
L09080177-01	1.32	23.23	21.82			93.56	
L09080177-02	1.32	37.46	35.17			93.66	
L09080177-03	1.3	22.82	21.25			92.70	
L09080177-04	1.3	31.49	28.75			90.92	
L09080177-05	1.29	34.72	31.53			90.46	
L09080178-01	1.3	32.58	27.56			83.95	
L09080178-02	1.3	35.37	30.23			84.91	
WG309353-01	1.29	34.72	31.53			90.46	9.542
WG309353-02	1.32	33.75	30.25			89.21	10.79

Analyst: 

PERCENT_SOLIDS - Modified 04/24/2008
PDF ID: 1462325
Report generated: 08/11/2009 08:28

2.3.2 Reactivity Data

2.3.2.1 Summary Data

LABORATORY REPORT

00083356

L09080178

08/12/09 14:33

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS02	L09080178-01	SW7.34	1	08-AUG-09
PRDS03	L09080178-02	SW7.34	1	08-AUG-09

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083357

Sample Number:	L09080178-01	PrePrep Method:	NONE	Instrument:	BURET
Client ID:	PRDS02	Prep Method:	SW7.34	Prep Date:	08/10/2009 07:31
Matrix:	Soil	Analytical Method:	SW7.34	Cal Date:	
Workgroup Number:	WG309303	Analyst:	DLP	Run Date:	08/10/2009 07:31
Collect Date:	08/07/2009 14:15	Dilution:	1	File ID:	ET.0908100731-10
		Units:	mg/kg		

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083358

Sample Number: **L09080178-02**
Client ID: **PRDS03**
Matrix: **Soil**
Workgroup Number: **WG309303**
Collect Date: **08/07/2009 14:30**

PrePrep Method: **NONE**
Prep Method: **SW7.34**
Analytical Method: **SW7.34**
Analyst: **DLP**
Dilution: **1**
Units: **mg/kg**

Instrument: **BURET**
Prep Date: **08/10/2009 07:31**
Cal Date:
Run Date: **08/10/2009 07:31**
File ID: **ET.0908100731-11**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Reactivity, Sulfide	18496-25-8		U	100	50.0

U Not detected at or above adjusted sample detection limit

2.3.2.2 QC Summary Data

Example Calculations - Reactive Sulfide

$$A = \frac{((B * C) - (D * E) * 16000}{F * G} = sulfide\,(mg / L)$$

$$\frac{A * I}{J} = reactive\ sulfide\ (mg / Kg)$$

Example Calculation:

B (mL of Iodine):	15
C (N of Iodine):	0.02514
D (mL of titrant):	9.4
E (N of titrant):	0.02489
16000 factor (1mL of 0.025N iodine reacts with 0.4mg sulfide):	16000
F (mL of scrubber solution used for titrating for sulfide):	100
G (dilution of sample (include 50/250 scrubber dilution)):	0.20
I (volume of NaOH placed in scrubber):	50
J (grams of sample used):	10
A=	114.5072
mg/Kg reactive sulfide=	572.536

Microbac Laboratories Inc.

Data Checklist

Date: 10-AUG-2009
Analyst: DLP
Analyst: NA
Method: REACTS
Instrument: BURET
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG309303

Calibration/Linearity	08-07-09
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	DLP
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
11-AUG-2009

Secondary Reviewer:
11-AUG-2009

2.3.2.3 Raw Data

WORKGROUP: WG309303

REACTIVE SULFIDE

☐ EPA ch. 7 SOP K7332 Revision #: 8
☐ Other
LCS: 5+239548 Daily Dilution: 5(821)/200 = Instrument: buret
non-reacted LCS Daily Dilution = 20.525

Iodine standardization (0.025 N and 0.1N)
mL 10 N titrant 0.0257 8-07-09
Volume I: 10 mL
Normality I: 0.0257

mL 8 N titrant: 0.0257 8-07-09
Volume I: 2 mL
Normality I: 0.103

Stock standardization (in duplicate)
mL I 1) 10 2) 10
N I 1) 0.103 2) 0.103
mL 0.025 titrant 1) 20.1 2) 20.1

821 = stock conc (mg/L)

7-21-09

SAMPLE	Grams Reacted	Volume Titrated	mL Iodine	N Iodine	mL 0.0257 N Sodium Thiosulfate
BLANK	X	200	15	0.0257	15.0
Non-reacted LCS (mg/L)	X	200	15		5.4
Reacted (mg/L)	10.0	100	15		10.8
08-107-01	10.013	100	5		5.0
02	10.062				5.0
03	10.038				5.0
-04	10.013				5.0
-05	10.051				5.0
08-149-01	10.0150				5.0
08-178-01	10.059	100	5	0.0257	4.9
02	10.049	100	5		4.9
DUP: 08-107-02	10.044	100	5	0.0257	5.0

Analyst: Courtney Thyne Date / Time: 08-10-09/731

DCN#80377

Microbac Laboratories Inc.
TITRAMETRIC REPORT

Workgroup (AAB#):WG309303 Analyst:DLP
Product:SW7.34 Run Date:08/10/2009 07:31
Analyte:Reactivity, Sulfide

SAMPLE NUMBER	Sample	Volume	Vol I	Nor I	Vol T	Nor T	Dil	NaOH	Scrub.	Anal.	Reported	Units
WG309303-01	250	200.0	15	.0257	15	.0257	1	50	250	0	0	mg/kg
WG309303-02	250	200.0	15	.0257	5.4	.0257	1	50	250	19.74	19.74	mg/kg
WG309303-03	10	100.0	15	.0257	10.8	.0257	1	50	250	431.8	431.8	mg/kg
L09080107-01	10.013	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080107-02	10.062	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
WG309303-04	10.062	100.0	5	.0257	5	.0257	1	50	250	0	0	mg/kg
L09080107-03	10.038	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080107-04	10.013	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080107-05	10.051	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080144-01	10.15	100.0	5	.0257	5	.0257	1	50	250	ND	ND	mg/kg
L09080178-01	10.059	100.0	5	.0257	4.9	.0257	1	50	250	ND	ND	mg/kg
L09080178-02	10.049	100.0	5	.0257	4.9	.0257	1	50	250	ND	ND	mg/kg
WG309303-05	10.044	100.0	5	.0257	5	.0257	1	50	250	0	0	mg/kg

REACTS_REPORT - Modified 03/06/2008

Report generated 08/11/2009 09:34

Microbac

2.3.3 PH Data

2.3.3.1 Summary Data

LABORATORY REPORT

00083367

L09080178

08/12/09 14:33

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS02	L09080178-01	9045D	1	08-AUG-09
PRDS03	L09080178-02	9045D	1	08-AUG-09

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083368

Sample Number: **L09080178-01**
Client ID: **PRDS02**
Matrix: **Soil**
Workgroup Number: **WG309380**
Collect Date: **08/07/2009 14:15**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **JBK**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/10/2009 16:00**
Cal Date:
Run Date: **08/10/2009 16:00**
File ID: **OS09081110492701**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	**10-29-7**	**5.07**			

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083369

Sample Number: **L09080178-02**
Client ID: **PRDS03**
Matrix: **Soil**
Workgroup Number: **WG309380**
Collect Date: **08/07/2009 14:30**

PrePrep Method: **NONE**
Prep Method: **9045D**
Analytical Method: **9045D**
Analyst: **JBK**
Dilution: **1**
Units: **UNITS**

Instrument: **ORION-4STA**
Prep Date: **08/10/2009 16:00**
Cal Date:
Run Date: **08/10/2009 16:00**
File ID: **OS09081110494001**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Corrosivity pH	**10-29-7**	**5.61**			

2.3.3.2 QC Summary Data

Microbac Laboratories Inc.

Data Checklist

Date: 10-AUG-2009
Analyst: JBK
Analyst: NA
Method: PH
Instrument: ORION 4-STAR
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG309380

Calibration/Linearity	08/10/2009
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JBK
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
11-AUG-2009

Secondary Reviewer:
11-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-11-2009 16:00:37

2.3.3.3 Raw Data

WORKGROUP: WG309380

pH

	Sample	Calibration Buffers	Water Misc. Liquid	50% Slurry Of Solid	50% Water Org. Liq. Mix
8/10	LCS 6 STD 34448	7, 4, 10	6.01		
	08-1760 05			6.80	
	-06			9.13	
	-07			9.10	
	-08			9.13	
	-09			9.22	
	-10			8.99	
	-11			8.78	
	-12			9.35	
	-13			8.98	
	08-178-01			5.07	
	-02			5.61	
	07-652-17			9.45	
	DUP 652-17			9.39	
8/10	LCS 9 STD 33444		9.01		

SW846 9040C/9045D

SM 4500-H(+)-B

EPA 150.1

SOP K1501 Rev 11

Circle Instrument

(Orion 4-Star)

Orion 710A #1

Orion 710A #2

Sargent - Welch

Analyst: _____ Date: 8/10/09 @ 1600

DCN#80384

2.3.4 Method Flashpoint

2.3.4.1 Summary Data

LABORATORY REPORT

00083376

L09080178

08/12/09 14:33

Submitted By

Microbac Laboratories Inc.
158 Starlite Drive
Marietta , OH 45750
(740) 373 - 4071

For

Account Name: Shaw E & I, Inc.
ABB Lummus Biulding
3010 Briarpark Drive Suite 4N
Houston, TX 77042
Attention: Jennifer Hoang

Project Number: 2773.025
Project: Longhorn AAP
Site: LONGHORN AAP KARNACK TX

P.O. Number: 389869/ 390836(GWTP)

Sample Analysis Summary

Client ID	Lab ID	Method	Dilution	Date Received
PRDS02	L09080178-01	1010	1	08-AUG-09
PRDS03	L09080178-02	1010	1	08-AUG-09

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083377

Sample Number: **L09080178-01**
Client ID: **PRDS02**
Matrix: **Soil**
Workgroup Number: **WG309412**
Collect Date: **08/07/2009 14:15**

PrePrep Method: **NONE**
Prep Method: **1010**
Analytical Method: **1010**
Analyst: **JBK**
Dilution: **1**
Units: **Degrees C**

Instrument: **PRECISION**
Prep Date: **08/11/2009 09:30**
Cal Date:
Run Date: **08/11/2009 09:30**
File ID: **PR09081115340901**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		**72.0**	**>**		

> Result is greater than the associated numerical value.

Report Number: **L09080178**
Report Date : **August 12, 2009**

00083378

Sample Number: **L09080178-02**
Client ID: **PRDS03**
Matrix: **Soil**
Workgroup Number: **WG309412**
Collect Date: **08/07/2009 14:30**

PrePrep Method: **NONE**
Prep Method: **1010**
Analytical Method: **1010**
Analyst: **JBK**
Dilution: **1**
Units: **Degrees C**

Instrument: **PRECISION**
Prep Date: **08/11/2009 09:30**
Cal Date:
Run Date: **08/11/2009 09:30**
File ID: **PR09081115343301**

Analyte	CAS. Number	Result	Qual	PQL	SDL
Ignitability		**70.0**	**>**		

> Result is greater than the associated numerical value.

2.3.4.2 QC Summary Data

1.0 Calculating the flashpoint of a sample.

$$Flashpoint = C + 0.033(760 - P)$$

Where:
C = Observed flashpoint (Celcius)
P = Ambient barometric pressure(mmHg) corrected for temperature and gravity.

Flashpoint = Flashpoint of the sample.

Microbac Laboratories Inc.

Data Checklist

Date: 11-AUG-2009
Analyst: JBK
Analyst: NA
Method: FLASH
Instrument: PRECISION
Curve Workgroup: NA
Runlog ID:
Analytical Workgroups: WG309412

Calibration/Linearity	01/2009
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JBK
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
11-AUG-2009

Secondary Reviewer:
11-AUG-2009

CHECKLIST1 - Modified 03/05/2008
Generated: AUG-11-2009 16:00:35