

Limited Phase II Environmental Site Assessment

JENA LEDD SITE

Highway 8 & Hanger Road

Jena, LaSalle Parish, LA

June 10, 2016

Terracon Project No. EH167088



Prepared for:

LaSalle Economic Development District

Jena, Louisiana

Prepared by:

Terracon Consultants, Inc.

Baton Rouge, Louisiana

terracon.com

Terracon

Environmental



Facilities



Geotechnical



Materials



June 10, 2016

LaSalle Economic Development District
PO Box 1889
Jena, LA 71342

Attn: Mr. Walter E. Dorroh, Jr
P: 318-992-4107
E: wdorroh@doroohkendrick.com

Re: Limited Phase II Environmental Site Assessment
Jena LEDD Site
Highway 8 & Hanger Road
Jena, LaSalle Parish, Louisiana
Terracon Project No. EH167088

Dear Mr. Dorroh:

At your request, Terracon Consultants, Inc. (Terracon) has completed a Limited Phase II Environmental Site Assessment (ESA) at the above-referenced property. This investigation was performed in accordance with Terracon Proposal No. PEH167088, dated May 9, 2016.

Terracon appreciates the opportunity to be of continued service to LaSalle Economic Development District. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
Terracon Consultants, Inc.


Diana Day, PE
Staff Engineer


Zack L. Dial, PE
Project Engineer



Terracon Consultants, Inc. 2822-B O'Neal Lane Baton Rouge, LA 70816
P 225-344-6052 F 225-344-6346 terracon.com

Environmental

Facilities

Geotechnical

Materials

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**Limited Phase II Environmental Site Assessment
Jena LEDD
Highway 8 & Hanger Road
Jena, LaSalle Parish, Louisiana
TERRACON PROJECT NO. EH167088**

1.0 INTRODUCTION

Terracon Consultants, Inc. (Terracon) has completed a Limited Phase II Environmental Site Investigation (ESA) at an approximate 29 acre tract located near the southwest intersection of Highway 8 and Hanger Road in Jena, LaSalle Parish, Louisiana (site). The site consists of undeveloped land. The location of the site is illustrated on Exhibit 1 in Appendix A. The general layout of the site and the soil boring locations are illustrated on Exhibit 2 in Appendix A. Tables summarizing the analytical results and the laboratory analytical reports are provided in Appendix B.

Terracon's Phase II ESA activities were completed in accordance with Terracon Proposal No. PEH167088, dated May 9, 2016. The purpose of the Phase II ESA was to evaluate surface conditions with respect to recognized environmental conditions (REC) identified at the site during Biome Consulting Group's Phase I Environmental Site Assessment (ESA) dated January 2016 (Project No. 2003.002). The results of the ESA reported the following RECs associated with the site:

- Presence of at least one historic oil production well on the property;
- Presence of oil distribution pipes connecting on-site wells to off-site collection facilities.

2.0 SCOPE OF SERVICES

Terracon's Phase II ESA was undertaken in response to the results of Biome Consulting Group's Phase I Environmental Site Assessment (ESA) dated January 2016 (Project No. 2003.002), which identified the above mentioned RECs. The scope of services to be included in this Phase II ESA was provided to Terracon by the client.

The Phase II ESA was conducted to determine the presence or absence of indicator contaminants in near surface soils associated with the historic oil production well on the property. The scope of services, was not intended to identify every chemical possibly associated with the site. Similarly, the proposed scope was not intended to determine the extent or magnitude of any existing contamination.

2.1 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the

preparation of the report. These Phase II ESA services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not restricted by ASTM E1903-11.

2.2 Additional Scope Limitations

Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, nondetectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this Phase II ESA. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

2.3 Reliance

This report has been prepared for the exclusive use and reliance of LaSalle Economic Development District and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of LaSalle Economic Development District and Terracon. Any unauthorized distribution or reuse is at LaSalle Economic Development District's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, Phase II ESA report, and Terracon's Agreement for Services. The limitation of liability defined in the terms and conditions is the aggregate limit of Terracon's liability to LaSalle Economic Development District and all relying parties unless otherwise agreed in writing.

3.0 FIELD INVESTIGATION

Terracon conducted the fieldwork under a safety plan developed for this project. Work was performed using United States Environmental Protection Agency (USEPA) Level D work attire consisting of hard hats, safety glasses, protective gloves, and protective boots.

3.1 Subsurface Investigation

Terracon's field activities were initiated on May 18, 2016 by Mr. Daniel Lafleur, a Terracon Environmental Technician. As part of the approved scope of work, three soil borings were advanced using a hand auger to a terminal depth of two feet below ground surface (bgs). Figure 2 presents the site layout and soil boring locations.

4.0 FIELD INVESTIGATION RESULTS

4.1 Laboratory Analytical Program

All collected samples were placed in laboratory provided sample containers, sealed and labeled appropriately and placed on ice in an insulated container for the duration of field activities. A chain-of-custody was prepared with sample identification, time of collection and other field information and placed inside the insulated container with the samples. The container was then sealed with a signed custody seal and relinquished to a courier for delivery to GCAL Analytical Laboratories, LLC (GCAL) in Baton Rouge, Louisiana.

Three soil samples were submitted to GCAL for selected analyses of Total Petroleum Hydrocarbon (TPH) as Diesel Range Organics (DRO) and Oil Range Organics (ORO) by Method 8015; and polycyclic aromatic hydrocarbons (PAH) by Method 8270; chloride; and 29B Metals.

Please refer to Appendix B for the laboratory analytical reports and summary table.

4.2 Analytical Results

One soil sample was collected at each boring and analyzed for TPH-DRO, TPH-ORO, PAH, chloride and 29 B metals.

Laboratory analysis of soil samples detected the following:

- TPH-DRO was detected in one sample (B-1) and TPH-ORO was detected in two soil samples (B-1 and B-2). The concentrations detected are below the LDEQ Risk Evaluation/Corrective Action Program (RECAP) Soil Screening Standard (SS).
- PAH constituents were detected below the laboratory's method detection limit in all collected soil samples.
- Chloride was detected below the laboratory's method detection limit in all collected soil samples.
- Five Louisiana Department of Natural Resources (LDNR) 29 B metal constituents were detected in all collected soil samples. Of the constituents detected, no concentrations exceeded the RECAP Soil SS or LDNR 29-B Standards.

A summary of the results is provided in Table 1 in Appendix B.

5.0 FINDINGS AND CONCLUSIONS

TPH-DRO, TPH-ORO, and metal constituents were detected in the soil but below their respective RECAP Soil SS and LDNR 29-B Standards. Based on the analytical results, it is Terracon's opinion that the near surface soils in the vicinity of the historic production well have not been impacted by the past use and further investigation is not warranted at this time.

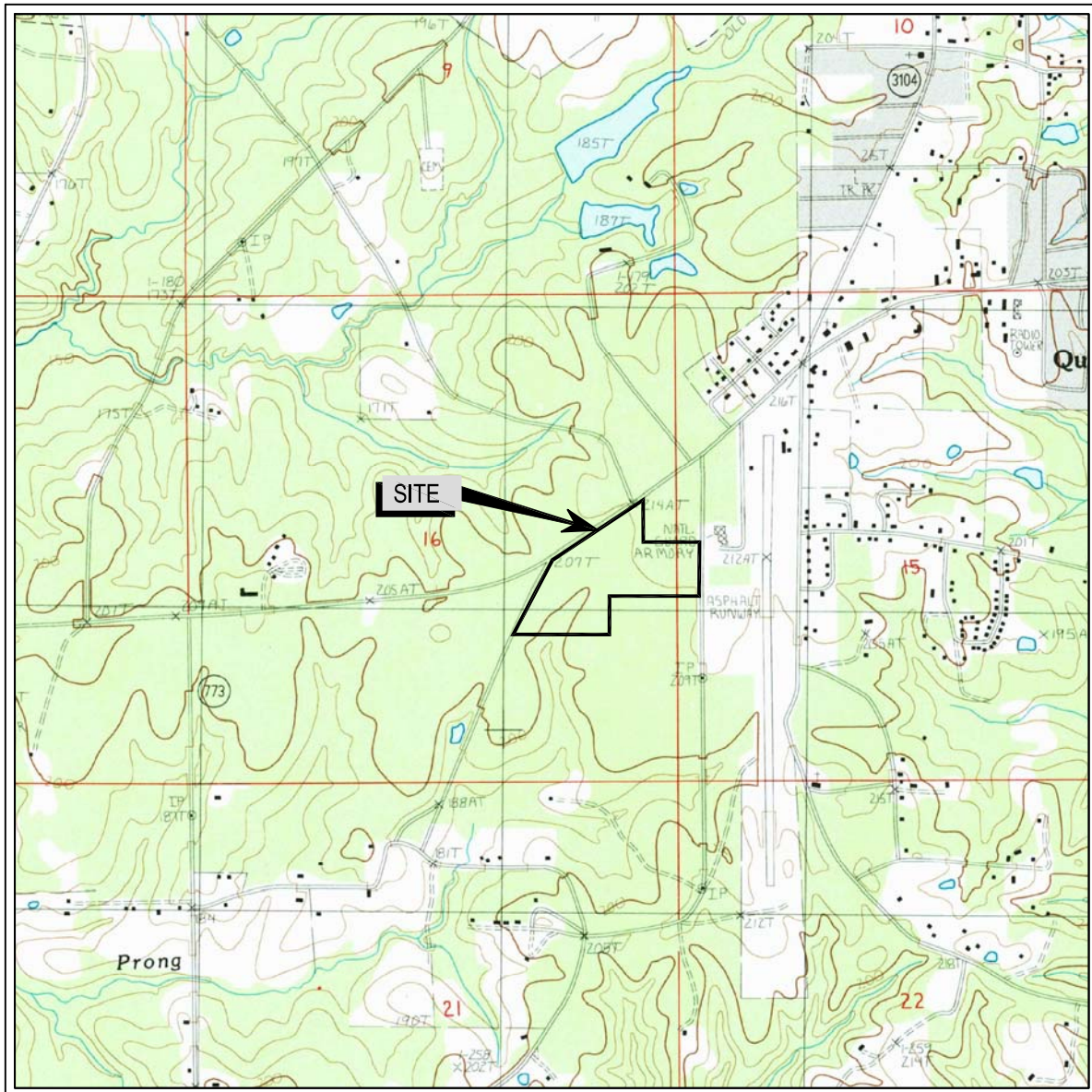
6.0 GENERAL COMMENTS

This report has been prepared for the exclusive use of the client for specific applications to the project as discussed. The analysis and opinions expressed in this report are based upon data obtained from the soil samples and laboratory analysis at the indicated locations or from other information discussed in this report. This report does not reflect variations in subsurface stratigraphy, hydrogeology, and contaminant distribution that may occur across the site. Actual subsurface conditions may vary and may not become evident without further assessment. The limitations of this assessment should be recognized as conclusions formulated on the environmental risk associated with this property.

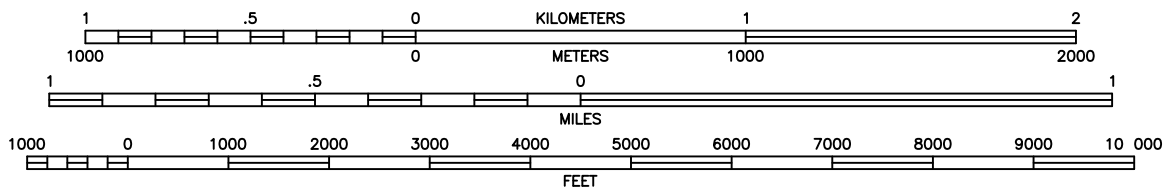
This report has been prepared in accordance with generally accepted environmental engineering practices. No warranties to third parties are intended or made. In the event any changes in the nature or location of suspected sources of contamination as outlined in this report are observed, the conclusions and recommendations contained in this report shall not be valid unless these changes are reviewed and the opinions of this report are modified or verified in writing by Terracon.

APPENDIX A

EXHIBITS



SCALE 1:24 000




CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE
JENA WEST, LA
PR1985
7.5 MINUTE SERIES (TOPOGRAPHIC)



*INDICATES WHICH MAP SITE IS LOCATED ON

Project Mngnr:	DMD	Project No.	EH167088	<div><p>2822-B O'Neal Lane, Building B Baton Rouge, LA 70816 (225) 344-6052</p></div>	<div>TOPOGRAPHIC VICINITY MAP</div> <div>PHASE II ENVIRONMENTAL SITE ASSESSMENT</div> <div>JENA LEDD SITE</div> <div>HIGHWAY 8 AND HANGER ROAD</div> <div>JENA, LA</div>	EXHIBIT
Drawn By:	TLY	Scale:	AS SHOWN			
Checked By:	DMD/MRF	File No.	ESA EH167088-1			
Approved By:	DMD	Date:	JUNE 2016			
				(225) 344-6346		1



LEGEND

EXHIBIT

PHASE II ENVIRONMENTAL SITE ASSESSMENT

2

APPENDIX B

TABLE and LABORATORY ANALYTICAL REPORTS



Table 1
Soil Analytical Results
Jena LEDD Site
Jena, Louisiana
EH167088

	B-1, 0-2 ft	B-2, 0-2 ft	B-3, 0-2 ft	LDNR 29-B Standards	Soil_SSni	Soil_Si	Soil_SSGW
TPH-DRO	10.9	<4.0	<4.0	NE	65	510	180
TPH-ORO	20.7	6.86	<6.66	NE	180	25000	10000
Arsenic	5.11	4.68	2.35	10	12	12	100
Barium	48.1	59.6	50.4	40000	550	14000	2000
Chromium	14.1	16.2	10.2	500	23	610	100
Lead	7.34	20.5	10.6	500	400	14000	100
Zinc	11.4	11.8	11.9	500	2300	61000	2800
Cadmium	<0.39	<0.4	<0.4	10	3.9	100	20
Selenium	<0.39	<0.4	<0.4	10	39	1000	20
Silver	<0.39	<0.4	<0.4	200	39	1000	100
Zinc	11.4	11.8	11.9	500	2300	61000	2800
Chloride	<20.0	<20.0	<20.0	NE	NE	NE	NE
Volatile Organic Compounds < MDL for each sample							

- (1) All data is reported in ppm. ppm = parts per million or milligrams per kilogram (mg/Kg).
- (2) Soil_SSni = RECAP Screening Standard for soil at non-industrial sites.
- (3) Soil_Ssi= RECAP Screening Standard for soil at industrial sites.
- (4) Soil_SSGW= RECAP Screening Standard of soil protective of groundwater.
- (5) See analytical report for full list of all constituents analyzed.

ANALYTICAL RESULTS

PERFORMED BY

GCAL, LLC
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 06/02/2016

GCAL Report 216052047



Project EH167088/ Jena LEDD site

<i>Deliver To</i>	<i>Additional Recipients</i>
Diana Day Terracon 2822 O'neil Lane Baton Rouge, LA 70820	NONE



Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DL	Diluted analysis – when appended to Client Sample ID
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
CF	HPLC or GC Confirmation
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report


J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	The result is estimated because it exceeded the instrument calibration range
E	Metals - % difference for the serial dilution is > 10%
P	RPD between primary and confirmation result is greater than 40

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.


Curtis Ekken/Mgr. of Data Del
Authorized Signature
GCAL Report 216052047

Certifications

Certification	Certification Number
DOD ELAP	L14-243
Alabama	01955
Arkansas	12-060-0
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
USDA Soil Permit	P330-10-00117

Case Narrative

Client: Terracon **Report:** 216052047

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

This report was revised on 06/02/16. Client requested results to be reported in mg/kg for all samples.

SEMI-VOLATILES MASS SPECTROMETRY

In the EPA 8270C SIM analysis for prep batch 586746, the MS/MSD exhibited recovery failures. The LCS/LCSD recoveries are acceptable.

METALS

In the EPA 6020A analysis, a chemical or physical interference necessitated a dilution for samples 21605204701 (B-1), 21605204702 (B-2) and 21605204703 (B-3). This is reflected in the elevated reporting limits.

Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21605204701	B-1	Solid	05/18/2016 11:00	05/19/2016 09:40
21605204702	B-2	Solid	05/18/2016 11:15	05/19/2016 09:40
21605204703	B-3	Solid	05/18/2016 11:30	05/19/2016 09:40

Summary of Compounds Detected

B-1	Collect Date	05/18/2016 11:00	GCAL ID	21605204701
	Receive Date	05/19/2016 09:40	Matrix	Solid

EPA 8015C DRO

CAS#	Parameter	Result	LOQ	Units
GCSV-00-4	Diesel Range Organics	10.9	4.00	mg/kg

EPA 8015C ORO

CAS#	Parameter	Result	LOQ	Units
GCSV-00-44	Oil Range Organics	20.7	6.66	mg/kg

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-38-2	Arsenic	5.11	0.39	mg/kg
7440-39-3	Barium	48.1	0.39	mg/kg
7440-47-3	Chromium	14.1	0.39	mg/kg
7439-92-1	Lead	7.34	0.39	mg/kg
7440-66-6	Zinc	11.4	7.87	mg/kg

B-2	Collect Date	05/18/2016 11:15	GCAL ID	21605204702
	Receive Date	05/19/2016 09:40	Matrix	Solid

EPA 8015C ORO

CAS#	Parameter	Result	LOQ	Units
GCSV-00-44	Oil Range Organics	6.86	6.66	mg/kg

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-38-2	Arsenic	4.68	0.40	mg/kg
7440-39-3	Barium	59.6	0.40	mg/kg
7440-47-3	Chromium	16.2	0.40	mg/kg
7439-92-1	Lead	20.5	0.40	mg/kg
7440-66-6	Zinc	11.8	8.00	mg/kg

Summary of Compounds Detected

B-3

Collect Date 05/18/2016 11:30

GCAL ID 21605204703

Receive Date 05/19/2016 09:40

Matrix Solid

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-38-2	Arsenic	2.35	0.40	mg/kg
7440-39-3	Barium	50.4	0.40	mg/kg
7440-47-3	Chromium	10.2	0.40	mg/kg
7439-92-1	Lead	10.6	0.40	mg/kg
7440-66-6	Zinc	11.9	8.00	mg/kg

Sample Results

B-1

Collect Date 05/18/2016 11:00

GCAL ID 21605204701

Receive Date 05/19/2016 09:40

Matrix Solid

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/23/2016 08:30	586746	EPA 3550C	1	05/23/2016 17:30	BLY	586827

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	0.00325	mg/kg
91-57-6	2-Methylnaphthalene	ND	0.00325	mg/kg
83-32-9	Acenaphthene	ND	0.00325	mg/kg
208-96-8	Acenaphthylene	ND	0.00325	mg/kg
120-12-7	Anthracene	ND	0.00325	mg/kg
56-55-3	Benzo(a)anthracene	ND	0.00325	mg/kg
50-32-8	Benzo(a)pyrene	ND	0.00325	mg/kg
205-99-2	Benzo(b)fluoranthene	ND	0.00325	mg/kg
191-24-2	Benzo(g,h,i)perylene	ND	0.00325	mg/kg
207-08-9	Benzo(k)fluoranthene	ND	0.00325	mg/kg
218-01-9	Chrysene	ND	0.00325	mg/kg
53-70-3	Dibenz(a,h)anthracene	ND	0.00325	mg/kg
206-44-0	Fluoranthene	ND	0.00325	mg/kg
86-73-7	Fluorene	ND	0.00325	mg/kg
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.00325	mg/kg
91-20-3	Naphthalene	ND	0.00325	mg/kg
85-01-8	Phenanthrene	ND	0.00325	mg/kg
129-00-0	Pyrene	ND	0.00325	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	0.1640	.109	ug/Kg	66	44 - 125
321-60-8	2-Fluorobiphenyl	0.1640	.106	ug/Kg	65	46 - 115
1718-51-0	Terphenyl-d14	0.1640	.112	ug/Kg	68	58 - 133

EPA 8015C DRO

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/24/2016 08:30	586747	EPA 3550C	1	05/24/2016 17:18	TLS	586964

CAS#	Parameter	Result	LOQ	Units
GCSV-00-4	Diesel Range Organics	10.9	4.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	1.67	1.2	ug/Kg	72	45 - 130

Sample Results

B-1
Collect Date 05/18/2016 11:00

GCAL ID 21605204701

Receive Date 05/19/2016 09:40

Matrix Solid

EPA 8015C ORO

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/24/2016 08:30	586748	EPA 3550C	1	05/24/2016 17:18	TLS	586965

CAS#	Parameter	Result	LOQ	Units
GCSV-00-44	Oil Range Organics	20.7	6.66	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	1.67	1.21	ug/Kg	73	45 - 130

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/23/2016 12:50	586792	EPA 3050B	10	05/24/2016 19:12	LWZ	586887

CAS#	Parameter	Result	LOQ	Units
7440-38-2	Arsenic	5.11	0.39	mg/kg
7440-39-3	Barium	48.1	0.39	mg/kg
7440-43-9	Cadmium	ND	0.39	mg/kg
7440-47-3	Chromium	14.1	0.39	mg/kg
7439-92-1	Lead	7.34	0.39	mg/kg
7782-49-2	Selenium	ND	0.39	mg/kg
7440-22-4	Silver	ND	0.39	mg/kg
7440-66-6	Zinc	11.4	7.87	mg/kg

EPA 9251

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/27/2016 11:30	587161	EPA 9251	1	05/27/2016 16:03	RXJ	587189

CAS#	Parameter	Result	LOQ	Units
16887-00-6	Chloride	ND	20.0	mg/kg

Sample Results

B-2

Collect Date 05/18/2016 11:15

GCAL ID 21605204702

Receive Date 05/19/2016 09:40

Matrix Solid

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/23/2016 08:30	586746	EPA 3550C	1	05/23/2016 18:25	BLY	586827

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	0.00329	mg/kg
91-57-6	2-Methylnaphthalene	ND	0.00329	mg/kg
83-32-9	Acenaphthene	ND	0.00329	mg/kg
208-96-8	Acenaphthylene	ND	0.00329	mg/kg
120-12-7	Anthracene	ND	0.00329	mg/kg
56-55-3	Benzo(a)anthracene	ND	0.00329	mg/kg
50-32-8	Benzo(a)pyrene	ND	0.00329	mg/kg
205-99-2	Benzo(b)fluoranthene	ND	0.00329	mg/kg
191-24-2	Benzo(g,h,i)perylene	ND	0.00329	mg/kg
207-08-9	Benzo(k)fluoranthene	ND	0.00329	mg/kg
218-01-9	Chrysene	ND	0.00329	mg/kg
53-70-3	Dibenz(a,h)anthracene	ND	0.00329	mg/kg
206-44-0	Fluoranthene	ND	0.00329	mg/kg
86-73-7	Fluorene	ND	0.00329	mg/kg
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.00329	mg/kg
91-20-3	Naphthalene	ND	0.00329	mg/kg
85-01-8	Phenanthrene	ND	0.00329	mg/kg
129-00-0	Pyrene	ND	0.00329	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	0.1660	.104	ug/Kg	63	44 - 125
321-60-8	2-Fluorobiphenyl	0.1660	.103	ug/Kg	62	46 - 115
1718-51-0	Terphenyl-d14	0.1660	.114	ug/Kg	69	58 - 133

EPA 8015C DRO

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/24/2016 08:30	586747	EPA 3550C	1	05/24/2016 17:32	TLS	586964

CAS#	Parameter	Result	LOQ	Units
GCSV-00-4	Diesel Range Organics	ND	4.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	1.67	1.21	ug/Kg	73	45 - 130

Sample Results

B-2
Collect Date 05/18/2016 11:15

GCAL ID 21605204702

Receive Date 05/19/2016 09:40

Matrix Solid

EPA 8015C ORO

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/24/2016 08:30	586748	EPA 3550C	1	05/24/2016 17:32	TLS	586965

CAS#	Parameter	Result	LOQ	Units
GCSV-00-44	Oil Range Organics	6.86	6.66	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	1.67	1.21	ug/Kg	73	45 - 130

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/23/2016 12:50	586792	EPA 3050B	10	05/24/2016 19:28	LWZ	586887

CAS#	Parameter	Result	LOQ	Units
7440-38-2	Arsenic	4.68	0.40	mg/kg
7440-39-3	Barium	59.6	0.40	mg/kg
7440-43-9	Cadmium	ND	0.40	mg/kg
7440-47-3	Chromium	16.2	0.40	mg/kg
7439-92-1	Lead	20.5	0.40	mg/kg
7782-49-2	Selenium	ND	0.40	mg/kg
7440-22-4	Silver	ND	0.40	mg/kg
7440-66-6	Zinc	11.8	8.00	mg/kg

EPA 9251

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/27/2016 11:30	587161	EPA 9251	1	05/27/2016 16:04	RXJ	587189

CAS#	Parameter	Result	LOQ	Units
16887-00-6	Chloride	ND	20.0	mg/kg

Sample Results

B-3
Collect Date 05/18/2016 11:30

GCAL ID 21605204703

Receive Date 05/19/2016 09:40

Matrix Solid

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/23/2016 08:30	586746	EPA 3550C	1	05/23/2016 18:43	BLY	586827

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	0.00326	mg/kg
91-57-6	2-Methylnaphthalene	ND	0.00326	mg/kg
83-32-9	Acenaphthene	ND	0.00326	mg/kg
208-96-8	Acenaphthylene	ND	0.00326	mg/kg
120-12-7	Anthracene	ND	0.00326	mg/kg
56-55-3	Benzo(a)anthracene	ND	0.00326	mg/kg
50-32-8	Benzo(a)pyrene	ND	0.00326	mg/kg
205-99-2	Benzo(b)fluoranthene	ND	0.00326	mg/kg
191-24-2	Benzo(g,h,i)perylene	ND	0.00326	mg/kg
207-08-9	Benzo(k)fluoranthene	ND	0.00326	mg/kg
218-01-9	Chrysene	ND	0.00326	mg/kg
53-70-3	Dibenz(a,h)anthracene	ND	0.00326	mg/kg
206-44-0	Fluoranthene	ND	0.00326	mg/kg
86-73-7	Fluorene	ND	0.00326	mg/kg
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.00326	mg/kg
91-20-3	Naphthalene	ND	0.00326	mg/kg
85-01-8	Phenanthrene	ND	0.00326	mg/kg
129-00-0	Pyrene	ND	0.00326	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	0.1640	.11	ug/Kg	67	44 - 125
321-60-8	2-Fluorobiphenyl	0.1640	.108	ug/Kg	66	46 - 115
1718-51-0	Terphenyl-d14	0.1640	.123	ug/Kg	75	58 - 133

EPA 8015C DRO

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/24/2016 08:30	586747	EPA 3550C	1	05/24/2016 18:16	TLS	586964

CAS#	Parameter	Result	LOQ	Units
GCSV-00-4	Diesel Range Organics	ND	4.00	mg/kg

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	1.67	1.2	ug/Kg	72	45 - 130

Sample Results

B-3
Collect Date 05/18/2016 11:30

GCAL ID 21605204703

Receive Date 05/19/2016 09:40

Matrix Solid

EPA 8015C ORO

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/24/2016 08:30	586748	EPA 3550C	1	05/24/2016 18:16	TLS	586965
CAS#	Parameter	Result	LOQ	Units		
GCSV-00-44	Oil Range Organics	ND	6.66	mg/kg		
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
84-15-1	o-Terphenyl	1.67	1.21	ug/Kg	73	45 - 130

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/23/2016 12:50	586792	EPA 3050B	10	05/24/2016 19:45	LWZ	586887
CAS#	Parameter	Result	LOQ	Units		
7440-38-2	Arsenic	2.35	0.40	mg/kg		
7440-39-3	Barium	50.4	0.40	mg/kg		
7440-43-9	Cadmium	ND	0.40	mg/kg		
7440-47-3	Chromium	10.2	0.40	mg/kg		
7439-92-1	Lead	10.6	0.40	mg/kg		
7782-49-2	Selenium	ND	0.40	mg/kg		
7440-22-4	Silver	ND	0.40	mg/kg		
7440-66-6	Zinc	11.9	8.00	mg/kg		

EPA 9251

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
05/27/2016 11:30	587161	EPA 9251	1	05/27/2016 16:05	RXJ	587189
CAS#	Parameter	Result	LOQ	Units		
16887-00-6	Chloride	ND	20.0	mg/kg		

GC/MS Semi-Volatiles QC Summary

Analytical Batch 586827		Client ID GCAL ID	MB586746 1573735	LCS586746 1573736 LCS				LCSD586746 1573737 LCSD				
Prep Batch 586746		Sample Type	MB	05/23/2016 08:30				05/23/2016 08:30				
Prep Method EPA 3550C		Analysis Date	05/23/2016 13:49	05/23/2016 14:07				05/23/2016 14:26				
		Matrix	Solid	Solid				Solid				
EPA 8270C SIM		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
1-Methylnaphthalene	90-12-0	ND	0.00330	0.167	0.136	82	43 - 111	0.167	0.130	78	5	30
2-Methylnaphthalene	91-57-6	ND	0.00330	0.167	0.133	80	39 - 114	0.167	0.127	76	5	30
Acenaphthene	83-32-9	ND	0.00330	0.167	0.133	80	44 - 111	0.167	0.126	76	5	30
Acenaphthylene	208-96-8	ND	0.00330	0.167	0.135	81	39 - 116	0.167	0.129	77	5	30
Anthracene	120-12-7	ND	0.00330	0.167	0.135	81	50 - 114	0.167	0.130	78	4	30
Benzo(a)anthracene	56-55-3	ND	0.00330	0.167	0.144	86	54 - 122	0.167	0.140	84	3	30
Benzo(a)pyrene	50-32-8	ND	0.00330	0.167	0.174	104	50 - 125	0.167	0.167	100	4	30
Benzo(b)fluoranthene	205-99-2	ND	0.00330	0.167	0.150	90	53 - 128	0.167	0.147	88	2	30
Benzo(g,h,i)perylene	191-24-2	ND	0.00330	0.167	0.151	91	49 - 127	0.167	0.147	88	3	30
Benzo(k)fluoranthene	207-08-9	ND	0.00330	0.167	0.153	92	56 - 123	0.167	0.153	92	0	30
Chrysene	218-01-9	ND	0.00330	0.167	0.142	85	57 - 118	0.167	0.138	83	3	30
Dibenz(a,h)anthracene	53-70-3	ND	0.00330	0.167	0.159	95	50 - 129	0.167	0.154	92	3	30
Fluoranthene	206-44-0	ND	0.00330	0.167	0.142	85	55 - 119	0.167	0.137	82	4	30
Fluorene	86-73-7	ND	0.00330	0.167	0.137	82	47 - 114	0.167	0.131	79	4	30
Indeno(1,2,3-cd)pyrene	193-39-5	ND	0.00330	0.167	0.181	109	49 - 130	0.167	0.177	106	2	30
Naphthalene	91-20-3	ND	0.00330	0.167	0.131	79	38 - 111	0.167	0.125	75	5	30
Phenanthrene	85-01-8	ND	0.00330	0.167	0.137	82	49 - 113	0.167	0.132	79	4	30
Pyrene	129-00-0	ND	0.00330	0.167	0.130	78	55 - 117	0.167	0.124	74	5	30
Surrogate												
2-Fluorobiphenyl	321-60-8	.117	70	.167	.121	73	46 - 115	.167	.118	71	NA	NA
Nitrobenzene-d5	4165-60-0	.119	71	.167	.124	74	44 - 125	.167	.121	73	NA	NA
Terphenyl-d14	1718-51-0	.145	87	.167	.141	85	58 - 133	.167	.137	82	NA	NA

Analytical Batch 586827		Client ID GCAL ID	B-1 21605204701	1573580MS 1573738 MS				1573580MSD 1573739 MSD				
Prep Batch 586746		Sample Type	SAMPLE	05/23/2016 08:30				05/23/2016 08:30				
Prep Method EPA 3550C		Analysis Date	05/23/2016 17:30	05/23/2016 17:48				05/23/2016 18:07				
		Matrix	Solid	Solid				Solid				
EPA 8270C SIM		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
1-Methylnaphthalene	90-12-0	0.00	0.00328	0.166	0.113	68	43 - 111	0.166	0.117	70	3	30
2-Methylnaphthalene	91-57-6	0.00	0.00328	0.166	0.110	66	39 - 114	0.166	0.115	69	4	30
Acenaphthene	83-32-9	0.00	0.00328	0.166	0.114	69	44 - 111	0.166	0.117	70	3	30
Acenaphthylene	208-96-8	0.00	0.00328	0.166	0.118	71	39 - 116	0.166	0.120	72	2	30
Anthracene	120-12-7	0.00	0.00328	0.166	0.122	74	50 - 114	0.166	0.123	74	1	30
Benzo(a)anthracene	56-55-3	0.00	0.00328	0.166	0.130	79	54 - 122	0.166	0.131	79	1	30
Benzo(a)pyrene	50-32-8	0.00	0.00328	0.166	0.154	93	50 - 125	0.166	0.157	95	2	30
Benzo(b)fluoranthene	205-99-2	0.00	0.00328	0.166	0.150	91	53 - 128	0.166	0.153	92	2	30
Benzo(g,h,i)perylene	191-24-2	0.00	0.00328	0.166	0.074	45*	49 - 127	0.166	0.077	46*	4	30
Benzo(k)fluoranthene	207-08-9	0.00	0.00328	0.166	0.121	73	56 - 123	0.166	0.139	84	14	30
Chrysene	218-01-9	0.00	0.00328	0.166	0.120	72	57 - 118	0.166	0.121	73	1	30
Dibenz(a,h)anthracene	53-70-3	0.00	0.00328	0.166	0.096	58	50 - 129	0.166	0.100	60	4	30
Fluoranthene	206-44-0	0.000265	0.00328	0.166	0.126	76	55 - 119	0.166	0.127	76	1	30
Fluorene	86-73-7	0.00	0.00328	0.166	0.122	74	47 - 114	0.166	0.125	75	2	30
Indeno(1,2,3-cd)pyrene	193-39-5	0.00	0.00328	0.166	0.108	65	49 - 130	0.166	0.112	67	4	30
Naphthalene	91-20-3	0.00	0.00328	0.166	0.106	64	38 - 111	0.166	0.111	67	5	30
Phenanthrene	85-01-8	0.00	0.00328	0.166	0.123	74	49 - 113	0.166	0.124	75	1	30
Pyrene	129-00-0	0.000178	0.00328	0.166	0.105	63	55 - 117	0.166	0.106	64	1	30
Surrogate												
2-Fluorobiphenyl	321-60-8	.106	65	.166	.107	65	46 - 115	.166	.107	64	NA	NA
Nitrobenzene-d5	4165-60-0	.109	66	.166	.108	65	44 - 125	.166	.11	66	NA	NA
Terphenyl-d14	1718-51-0	.112	68	.166	.116	70	58 - 133	.166	.118	71	NA	NA

GC Semi-Volatiles QC Summary

Analytical Batch 586964		Client ID GCAL ID	MB586747 1573740	LCS586747 1573741				LCSD586747 1573742					
Prep Batch 586747		Sample Type Prep Date	MB 05/24/2016 08:30	LCS 05/24/2016 08:30				LCSD 05/24/2016 08:30					
Prep Method EPA 3550C		Analysis Date Matrix	05/24/2016 15:56 Solid	05/24/2016 16:18 Solid				05/24/2016 16:32 Solid					
EPA 8015C DRO			Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Diesel Range Organics	GCSV-00-4		ND	4.00	33.3	25.7	77	38 - 132	33.3	27.5	83	7	30
Surrogate o-Terphenyl	84-15-1		1.22	73	1.67	1.3	78	45 - 130	1.67	1.33	80	NA	NA

Analytical Batch 586964		Client ID GCAL ID	B-2 21605204702		1573581MS 1573743				1573581MSD 1573744				
Prep Batch 586747		Sample Type Prep Date	SAMPLE 05/24/2016 08:30		MS 05/24/2016 08:30				MSD 05/24/2016 08:30				
Prep Method EPA 3550C		Analysis Date Matrix	05/24/2016 17:32 Solid		05/24/2016 17:47 Solid				05/24/2016 18:02 Solid				
EPA 8015C DRO			Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Diesel Range Organics		GCSV-00-4	2.92	4.00	33.3	22.4	58	38 - 132	33.3	24.0	63	7	30
Surrogate o-Terphenyl		84-15-1	1.21	73	1.67	1.28	77	45 - 130	1.67	1.31	79	NA	NA

Analytical Batch 586965		Client ID GCAL ID	MB586748 1573745	LCS586748 1573746				LCSD586748 1574231					
Prep Batch 586748		Sample Type Prep Date	MB 05/24/2016 08:30	LCS 05/24/2016 08:30				LCSD 05/24/2016 08:30					
Prep Method EPA 3550C		Analysis Date Matrix	05/24/2016 15:56 Solid	05/24/2016 16:49 Solid				05/24/2016 17:03 Solid					
EPA 8015C ORO			Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Oil Range Organics	GCSV-00-44		ND	6.66	66.7	43.2	65	39 - 106	66.7	49.4	74	13	40
Surrogate o-Terphenyl	84-15-1		1.23	74	1.67	1.18	71	45 - 130	1.67	1.23	74	NA	NA

Analytical Batch 586965		Client ID GCAL ID	B-3 21605204703	1573582MS 1573747				1573582MSD 1573748					
Prep Batch 586748		Sample Type Prep Date	SAMPLE 05/24/2016 08:30	MS 05/24/2016 08:30				MSD 05/24/2016 08:30					
Prep Method EPA 3550C		Analysis Date Matrix	05/24/2016 18:16 Solid	05/24/2016 18:31 Solid				05/24/2016 18:45 Solid					
EPA 8015C ORO			Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Oil Range Organics	GCSV-00-44		1.49	6.66	66.7	60.0	88	39 - 106	66.7	59.6	87	1	40
Surrogate o-Terphenyl	84-15-1		1.21	73	1.67	1.28	77	45 - 130	1.67	1.24	74	NA	NA

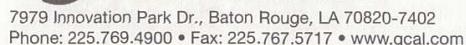
Inorganics QC Summary

Analytical Batch 586887		Client ID GCAL ID	MB586792 1573857	LCS586792 1573858			
Prep Batch 586792		Sample Type	MB	LCS			
Prep Method EPA 3050B		Prep Date	05/23/2016 12:50	05/23/2016 12:50			
		Analysis Date	05/24/2016 10:30	05/24/2016 10:35			
		Matrix	Solid	Solid			
EPA 6020A		Units Result	mg/kg LOQ	Spike Added	Result	%R	Control Limits%R
Arsenic	7440-38-2	ND	0.040	2.00	1.92	96	80 - 120
Barium	7440-39-3	ND	0.040	2.00	1.89	95	80 - 120
Cadmium	7440-43-9	ND	0.040	2.00	1.93	97	80 - 120
Chromium	7440-47-3	ND	0.040	2.00	1.99	99	80 - 120
Lead	7439-92-1	ND	0.040	2.00	1.99	99	80 - 120
Selenium	7782-49-2	ND	0.040	0.40	0.41	103	80 - 120
Silver	7440-22-4	ND	0.040	2.00	2.01	101	80 - 120
Zinc	7440-66-6	ND	0.80	40.0	38.1	95	80 - 120

General Chemistry QC Summary

Analytical Batch 587189	Client ID GCAL ID	MB587161 1575538	LCS587161 1575539
Prep Batch 587161	Sample Type Prep Date	MB 05/27/2016 11:30	LCS 05/27/2016 11:30
Prep Method EPA 9251	Analysis Date Matrix	05/27/2016 16:02 Solid	05/27/2016 16:02 Solid
EPA 9251		Units Result	mg/kg LOQ
Chloride	16887-00-6	ND	20.0
		Spike Added	Result %R Control Limits%R
		600	576 96 90 - 110

Analytical Batch 587189	Client ID GCAL ID	B-1 21605204701	1573580DUP 1575541	1573580MS 1575540
Prep Batch 587161	Sample Type Prep Date	SAMPLE 05/27/2016 11:30	DUP 05/27/2016 11:30	MS 05/27/2016 11:30
Prep Method EPA 9251	Analysis Date Matrix	05/27/2016 16:03 Solid	05/27/2016 16:03 Solid	05/27/2016 16:21 Solid
EPA 9251		Units Result	mg/kg LOQ	Result RPD RPD Limit
Chloride	16887-00-6	7.60	20.0	8.38 10 25
				Spike Added
				600
				Result %R Control Limits%R
				547 90 90 - 110



Client ID: 4916 - Terracon

SDG: 216052047

PM: SAK

[illegible]

WHITE: CLIENT FINAL REPORT - CANARY: CLIENT

Matrix¹: W = water, S = solid, L = liquid, T = tissue

*Requires prior approval, rush charges may apply.

We cannot accept verbal changes. Please email written changes to your PM.



SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP 216052047			CHECKLIST	YES	NO	NA	
Client PM SAK 4916 - Terracon	Transport Method CUST	Profile Number 266419	Received By McCune, Dodie N.	Samples received with proper thermal and chemical preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				Radioactivity is <1600 cmp? If no, record cmp value in notes section.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Line Item(s) 7 - Soil- GRO/ORO/DRO/PAH/ 29BMetals	Receive Date(s) 05/20/16		Custody seals present and intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
			COC relinquished and complete (including sample IDs, collect dates/times, and sampler name)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			Short holds or RUSH samples received?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
			All containers received in good condition and within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			All sample labels and containers received match the chain of custody?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
			Preservation checked at receipt? Exceptions: VOC, Coliform, TOC, Oil and Grease, DOC	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
			Preservative added to any containers?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
			VOC water containers received with headspace < 6mm?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Received filtered sample volume for dissolved analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
Trip blank present in all coolers containing VOC waters?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
Samples collected in containers provided by GCAL?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
COOLERS			DISCREPANCIES	LAB PRESERVATIONS			
Airbill	Thermometer ID: E26	Temp(°C)	None	None			
		2.2					
NOTES							

Revision 1.5

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