

**Soil Characterization Report –
Pit CS-47**

Near Rangely Weber Station 47
Rio Blanco County, Colorado

Colorado Oil and Gas
Conservation Commission



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August 17, 2017

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1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec), on behalf of Chevron Environmental Management Company (Chevron), is pleased to provide the Colorado Oil and Gas Conservation Commission (COGCC) with this Soil Characterization Report for closure of the former collection station 47 pit (Pit CS-47) at Rangely Weber Station 47 in Rio Blanco County, Colorado (the Site). The COGCC has assigned Remediation Project No. 9141 to the Project.

1.1 OBJECTIVE

Chevron submitted COGCC Form 27 (Site Investigation and Remediation Work Plan), dated February 6, 2017, which summarized the results of the Pit CS-47 closure activities, to the COGCC. The COGCC provided an approved eForm 27 dated February 7, 2017, which included 11 conditions of approval (COAs). The objectives of this investigation were to meet COA #1 and COA #10 as described in the eForm 27 and include the following:

- Six soil borings (SB-01 through SB-06) were advanced radially around MW-01 to further evaluate and define the lateral and vertical extent of total petroleum hydrocarbons (TPH) in soil (COA #1); and
- Wells MW-04 and MW-05 were installed to delineate the extent of light non-aqueous phase liquid (LNAPL) observed in the Pit CS-47 excavation (COA #10).

1.2 ORGANIZATION

This report is organized into the following sections summarizing:

- Site background;
- Site investigation activities;
- Analytical results; and
- Conclusions and recommendations.

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2.0 SITE BACKGROUND

The Site is an active oil and gas field that is bordered by the town of Rangely, Colorado to the south, the White River (River) to the north and west, and Rangely's waste water treatment ponds to the east. The River is approximately 600 feet to the north and the waste water treatment ponds are approximately 650 feet to the east. Pit CS-47 is located on privately owned land leased by Chevron. The Site lies within a relatively flat river valley at an elevation of approximately 5,200 feet above mean sea level (amsl) with upland areas rising 400 to 500 feet above the valley both north and south of the Site.

2.1 SITE DESCRIPTION

The Site is an active oil and gas field that is bordered by the town of Rangely, Colorado to the south, the White River (River) to the north and west, and Rangely's waste water treatment ponds to the east. The river is approximately 600 feet to the north and the waste water treatment ponds are approximately 650 feet to the east. Pit CS-47 is located on privately owned land leased by Chevron. The Site lies within a relatively flat river valley at an elevation of approximately 5,200 feet above mean sea level (amsl) with upland areas rising 400 to 500 feet above the valley both north and south of the Site.

2.2 PREVIOUS INVESTIGATION AND REMEDIATION

During decommissioning of Pit CS-47 in October 2016, soil impacts were noted below the liner based upon visual observation, odor, and photoionization detector (PID) measurements. Based on these observations, soil was excavated to approximately 10 feet below ground surface (bgs), which was just above the groundwater table. Confirmation soil samples collected from the north (CS47-NW), east (CS47-EW), and west (CS47-WW) sidewalls had concentrations below COGCC allowable limits outlined in Table 910-1 (allowable limits). Confirmation soil samples collected from the south sidewall (CS47-SW) and excavation floor (CS47-ESB2) had concentrations that exceeded the allowable limit for constituent of concern (COC) TPH. Additionally, the concentration of benzo(a)anthracene and the laboratory reporting limit (LRL) for benzene exceeded the allowable limit for both samples.

Subsequently, four hand auger borings (CS47-AH1 through CS47-AH4) were advanced south of Pit CS-47 in November 2016 to define the horizontal extent of TPH soil impacts. The soil samples collected from the borings defined the horizontal extent of TPH to below the allowable limits. In January 2017, approximately 1,085 cubic yards of impacted soil were excavated from the floor and south sidewall of Pit CS-47. A second confirmation sample collected from the south sidewall (also named CS47-SW) had concentrations below allowable limits for TPH and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Because the floor of the excavation consisted of coarse gravel, which was not conducive to soil sampling or analysis, a groundwater sample (CS47-PW) was collected as a confirmation sample (from the floor). Dissolved BTEX concentrations were

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below the allowable limits in the groundwater sample; however, a trace of LNAPL was observed on the groundwater surface. Groundwater and LNAPL were removed during excavation activities and disposed of at the Chevron treatment plant. All impacted soils were applied to the Chevron-operated land farm in Rangely, Colorado. With COGCC approval, the Pit CS-47 excavation was backfilled and graded to match the surrounding area.

Monitoring wells MW-01, MW-02, and MW-03 were installed to delineate the extent of petroleum hydrocarbon impacts. Concentrations of TPH and BTEX were not detected above the allowable limits in soil samples collected during the installation of monitoring wells MW-02 and MW-03. The TPH concentration in the soil sample collected during the installation of monitoring well MW-01 exceeded the allowable limit. BTEX concentrations detected in groundwater samples from monitoring wells MW-01, MW-02, and MW-03 and previously installed monitoring well TW-01 were below the allowable limits.

Stantec submitted a *Site Investigation Work Plan – Pit CS-47*, dated March 17, 2017 (Work Plan), to COGCC. This report discusses results of the Site work activities completed in accordance with the approved Work Plan.

3.0 SITE INVESTIGATION ACTIVITIES

Advancement of a total of six soil borings (SB-01 through SB-06) and installation of two down-gradient monitoring wells (MW-04 and MW-05) was completed under the scope of work for the Work Plan. The locations of the soil borings and monitoring wells are shown on **Figure 1**.

The following sections describe in greater detail the permitting, line location and clearance, soil and groundwater sampling, surveying, and waste management activities completed as part of the additional investigation.

3.1 PRELIMINARY FIELD ACTIVITIES

3.1.1 Permitting

Well permits were obtained for the two monitoring wells and a Notice of Intent to Construct Monitoring Holes was obtained for the six soil borings advanced through groundwater. Stantec submitted a groundwater well installation application and coordinated with the State Engineer to receive the necessary permits prior to mobilization to the Site. Additionally, the Colorado Division of Water Resources (CDWR) was notified three days prior to well installation.

Notice of Intent to Construct Monitoring Holes (GWS-51) and Groundwater Well Installation Applications (GWS-31) can be found in **Appendix A**.

3.1.2 Line Location and Clearance

As required by law, the Utility Notification Center of Colorado (UNCC) was notified 48 hours before intrusive activities. In addition to notifying the UNCC, Stantec reviewed all subsurface assessment and excavation locations with Chevron operations staff prior to breaking ground. No intrusive work (e.g., borings or test pits) was conducted within 5 feet of a known underground utility.

Each soil borehole/monitoring well location was cleared for subsurface utilities from ground surface to a depth of 5 feet bgs using soft digging techniques.

3.2 SOIL INVESTIGATION ACTIVITIES

3.2.1 Soil Borings

Following borehole clearance, soil borings SB-01 through SB-06 were advanced around monitoring well MW-01 and soil borings were advanced for monitoring wells MW-04 and MW-05. Soil borings were advanced to approximately 20 feet bgs using a direct-push Geoprobe® rig.

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Stantec field personnel logged soil cores for lithological content using the Unified Soil Classification System (USCS) as a guide, and included relative moisture content, composition, first-encountered groundwater, PID readings, and other notable field observations on the soil boring logs included in **Appendix B**. Portions of each soil core were placed in a Ziploc® bag and field-screened using a PID to evaluate the presence of volatile organic compounds (VOCs) that may collect in the headspace of the bag.

The Work Plan specified that using standard field screening techniques, a minimum of one soil sample would be collected at each soil boring location. Samples were biased to high PID readings or visual and olfactory observations indicating the potential presence of petroleum hydrocarbons. With exception of SB-05, all soil samples were collected within the vadose zone. To determine the vertical extent of TPH impacts below the vadose zone, samples were collected from SB-05 to a depth of 20 feet bgs. One soil sample per boring was collected from soil borings SB-02, SB-03, and SB-04; two soil samples per boring were collected from soil borings SB-01 and SB-06, and four soil samples were collected from soil boring SB-05.

Soil borings SB-01 through SB-06, MW-04, and MW-05 were completed between May 15 and 18, 2017. Following sample collection, soil borings SB-01 through SB-06 were plugged and abandoned in accordance with CDWR guidelines.

3.2.2 Subsurface Conditions

Soils encountered beneath the Site consisted primarily of sand and sand/clay mixtures to a depth of approximately 10 feet bgs, underlain by sandy gravel to the total depth explored of approximately 20 feet bgs. This is consistent with materials previously encountered beneath the Site during the remedial excavation at Pit CS-47 and the installation of monitoring wells MW-01 through MW-03.

Groundwater was initially encountered in the borings advanced during this investigation at depths ranging from approximately 7 to 9 feet bgs. Elevated PID readings (above 100 parts per million [ppm]) were observed in the vadose zone at approximate depth ranges of 2 to 9 feet bgs in borings SB-01, SB-02, SB-04, SB-05, and SB-06. Soil boring logs are included in **Appendix B**.

3.2.3 Soil Analysis

At least one soil sample was collected from each soil boring location for delineating the extent of soils exceeding the TPH allowable limits. Two or more samples were collected as necessary to further delineate the vertical extent of TPH impacts.

Soil samples were collected in sample containers appropriate for the specified analyses, sealed, labeled, and placed into an ice-filled cooler for preservation. Soil samples were submitted to ALS Environmental and analyzed for the following COCs:

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- TPH diesel range organics (DRO) (C10-C36) by U.S. Environmental Protection Agency (EPA) Method 8015M;
- TPH gasoline range organics (GRO) (C6-C10) by EPA Method 8015D;
- BTEX by EPA Method 8260B;
- Polycyclic aromatic hydrocarbons (PAHs) (COGCC Table 910) by EPA Method 8270D;
- Electrical conductivity (EC) by U.S. Department of Agriculture (USDA) Method H60;
- Sodium adsorption ratio (SAR) by USDA Method H60;
- pH by EPA Method 9045D;
- Metals (COGCC Table 910) by EPA Method 6010C;
 - Mercury by EPA Method 7471B;
 - Hexavalent chromium by EPA Method 7196A; and
 - Trivalent chromium by calculation.

3.3 GROUNDWATER INVESTIGATION ACTIVITIES

3.3.1 Well Installation

Monitoring wells MW-04 and MW-05 were installed using a Geoprobe® rig with 6.5-inch diameter hollow stem augers. The 2-inch diameter monitoring wells were installed west of Pit CS-47 as shown on **Figure 1**. Monitoring well MW-04 meet refusal at 15 feet bgs; therefore, a 0.01-inch slotted poly-vinyl chloride (PVC) screen was set from 5 to 15 feet bgs, and Schedule 40 PVC casing from 5 feet bgs to approximately 2.7 feet above ground surface. Monitoring well MW-05 was installed to 20 feet bgs, with a 0.01-inch slotted PVC screen from 5 to 19.5 feet bgs, and Schedule 40 PVC casing from 5 feet bgs to approximately 3.1 feet above ground surface. In both wells, the well annulus was backfilled with 10/20 silica sand from 4 feet bgs to the total well depth, bentonite pellets from 3 to 4 feet bgs, and hydrated bentonite chips from ground surface to 3 feet bgs. The PVC casing for both wells extends above ground surface and is protected with an above grade steel monument with lockable cap. A summary of the monitoring well construction details is shown on **Table 1**.

3.3.2 Well Development

Monitoring wells MW-04 and MW-05 were developed on May 18, 2017 using surge and purge methods to enhance communication with the water bearing zone. Prior to development, the depth to groundwater and total well depth were measured to determine the quantity of water within the well casing. Well development activities were completed using a surge block and bailer to remove fines from the well screen.

3.3.3 Groundwater Sampling

A comprehensive gauging event of all Site wells, including newly installed wells MW-04 and MW-05, was conducted on June 12, 2017. Current and historical groundwater elevation data are presented in **Table 2**. Olsson Associates generated a groundwater elevation contour map

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from the June 2017 gauging data, and it is presented in **Appendix D**. The groundwater flow direction was primarily to the west towards the River, which is consistent with the previously determined flow direction.

Groundwater samples from all Site wells, including newly installed wells MW-04 and MW-05, were collected on May 25, 2017 by Olsson Associates. A duplicate sample was collected from well MW-03. A figure showing BTEX and TPH (DRO and GRO) concentrations is included in **Appendix D**.

3.3.4 Groundwater Analysis

Groundwater samples were collected in sample containers appropriate for the specified analyses, sealed, labeled, and placed into an ice-filled cooler for preservation. Groundwater samples were transported via a lab courier and submitted under chain-of-custody protocol to ALS Environmental for the following analyses:

- BTEX by EPA Method 8260B; and
- Chloride and sulfate by EPA Method 9056A.

3.4 SURVEYING

Soil borings and monitoring well locations were surveyed on May 19, 2017, and tied into the existing monitoring wells coordinates. The monitoring well top of casing (TOC) elevations were also surveyed and tied into the existing well TOC elevations.

3.5 WASTE MANAGEMENT

Any non-dedicated or non-disposable sampling equipment that encountered soil or groundwater was decontaminated before and after each use. Sampling implements, such as spatulas, trowels, pumps (if used) were washed with a Liquinox® water solution and rinsed with distilled water before and after sample collection.

Decontamination and development water were removed following assessment activities and disposed of at the Chevron treatment plant. All impacted soils were applied to the Chevron-operated land farm in Rangely, Colorado.

4.0 ANALYTICAL RESULTS

Completed certified laboratory analysis reports and chain-of-custody documentation are included in **Appendix C**.

4.1 SOIL ANALYTICAL RESULTS

Soil sample analytical results are included in **Table 3** and **Table 4**. Soil analytical results for soil borings SB-01 through SB-06 and from monitoring wells MW-04 and MW-05 are compared to Allowable Limits. Soil analytical results for total TPH (TPH-GRO and TPH-DRO) and BTEX are shown on **Figure 2**.

Soil analytical results are summarized below:

- Concentrations of total TPH (TPH-GRO and TPH-DRO) in soil samples collected from soil borings SB-01 and SB-03 through SB-06 exceeded the allowable limit for TPH of 500 milligrams per kilogram (mg/kg).
 - Exceedance concentrations ranged from 821 mg/kg in soil boring SB-05 (4-4.5') to 37,100 mg/kg in soil boring SB-06 (4-5').
- Concentrations of benzene in soil samples collected from soil borings SB-05 and SB-06 exceeded the allowable limit for benzene of 0.17 mg/kg.
 - Exceedance concentrations ranged from 2.6 mg/kg in soil boring SB-06 (4-5') to 11 mg/kg in soil boring SB-05 (8-10').
- Concentrations of benzo(a)anthracene in soil samples collected from soil borings SB-05 and SB-06 exceeded the allowable limit for benzo(a)anthracene of 0.22 mg/kg.
 - Exceedance concentrations ranged from 0.30 mg/kg in soil boring SB-06 (7-10') to 1.1 mg/kg in soil boring SB-06 (4-5').
- Concentrations of benzo(a)pyrene in soil samples collected from soil boring SB-01 exceeded the allowable limit for benzo(a)pyrene of 0.022 mg/kg.
 - Exceedance concentrations were 0.10 mg/kg in soil boring SB-01 (6-9') and 1.3 mg/kg in soil boring SB-01 (3.5-4.5').
- It should be noted that exceedances of benzene, benzo(a)anthracene and benzo(a)pyrene were always associated with TPH exceedances. Benzo(a)pyrene exceedances were observed when TPH concentrations exceeded 1,300 mg/kg, benzene exceedances were observed when TPH concentrations exceeded 2,700 mg/kg

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and benzo(a)anthracene exceedances were observed when TPH concentrations exceeded 7,500 mg/kg.

4.2 GROUNDWATER ANALYTICAL RESULTS

Current and historical groundwater sample analytical results are summarized in **Table 5**. Groundwater analytical results are compared to the allowable limits. The results of the most recent groundwater investigation (May 2017) are summarized below:

- With exception of MW-01, LNAPL was not observed at any of the monitoring wells. At MW-01, LNAPL was observed at a thickness of 0.01 feet.
- BTEX concentrations in all monitoring wells are less than the allowable limits.
- TPH-GRO was not detected at any Site monitoring well.
- TPH-DRO was detected at all monitoring wells, with exception of MW-04 and TW-01. Concentrations at MW-02 through MW-05 and TW-01 had a maximum concentration of 1.6 milligrams per liter (mg/L). The concentration at MW-01 was detected at 38 mg/L. COGCC does not have any allowable limit for TPH in groundwater.
- Chloride concentrations at monitoring wells MW-01, MW-03, MW-04, and MW-05 exceed the allowable limit. The allowable limit was based on 1.25 times the concentration of chloride at TW-01 on January 16, 2017.

Sulfate concentrations at monitoring wells MW-01, MW-03, and MW-05 slightly exceed the allowable limit. The allowable limit was based on 1.25 times the concentration of sulfate at TW-01 on January 16, 2017

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the objectives of the soil and groundwater investigation, the following observations have been summarized:

COA # 1 - Evaluate and define the lateral and vertical extent of total petroleum hydrocarbons (TPH) in soil at MW-01.

Based on the results of soil samples collected at SB-01 through SB-06, vadose zone soil was found to have concentrations of TPH above allowable limits at depths ranging from 2 to 9 feet bgs north of Pit CS-47 near MW-01. The results of samples collected at SB-05 indicate that petroleum hydrocarbons extend into the saturated zone and are delineated to below allowable limits between 13 and 18 feet bgs.

In attempt to identify the source of the petroleum hydrocarbon impacts observed near MW-01, aerial photos were obtained dating back to 1962. Following review of the data package, the aerial image from 1983 does show a black circular feature near the location of MW-01, which could potentially be a secondary production pit. The aerial data package is included as **Appendix E**.

The extent of petroleum hydrocarbons in the vadose zone has not been defined and requires additional assessment to delineate the lateral extents of petroleum hydrocarbons in soil. Refer to Section 5.1 for recommendations on additional soil assessment.

COA # 10 - Delineate the extent of light non-aqueous phase liquids (LNAPL) observed during the Former Pit CS-47 excavation.

Based on the predominant groundwater flow direction (west from Pit CS-47) and BTEX and TPH concentrations at down-gradient monitoring wells MW-03, MW-04, and MW-05, the data indicate that Pit CS-47 did not adversely impact groundwater above allowable limits and LNAPL observed during closure activities was limited to the area of the Former Pit. In addition, soil samples collected from MW-04 and MW-05 did not exceed allowable limits, and as shown on the soil boring logs, there was no evidence of petroleum hydrocarbon impacts observed visually, olfactory, or elevated PID readings.

5.1 RECOMMENDATIONS

Based on the data collected near MW-01, it is recommended that additional soil borings and monitoring wells be advanced to delineate the lateral extents of impacted soil in the vadose zone and determine if groundwater has been affected down-gradient of MW-01. The following are a list of recommendations:

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- Based the results of this assessment, several COCs included on the Table 910-1 were not detected and Chevron would like to request the reduction of soil COCs from the Table 910-1 to only TPH, BTEX, benzo(a)anthracene, benzo(a) pyrene, EC, SAR, and arsenic.
 - In addition to the above analytical, the TPH results will be fractionated into aliphatic and aromatic compounds over specified carbon ranges to help evaluate if landfarming is a potential remedial strategy for impacted soil.
- Using the same soil boring procedures described in the Work Plan, advance up to 18 soil borings (12 proposed and 6 contingent) to determine the lateral extent of petroleum hydrocarbons in soil:
 - The area around MW-01 will be assessed on a grid pattern. Grid spacing layout will be developed using a combination of findings from previous assessments and the known locations of above and below grade infrastructure. It is anticipated the grid spacing will be approximately 20 feet. The approximate locations of the proposed borings are shown on **Figure 3**.
 - Subsurface soils will be accessed using direct-push technology to advance soil borings and determine the lateral and vertical extent of impacted soil at each location. Based on previous assessments, it is anticipated the borings will extend to 20 feet bgs. Up to three samples will be collected per location to identify:
 - The top elevation of the impacted soil layer or clean overburden;
 - The maximum level of impacts at the location; and
 - The bottom elevation of the impacted soil layer.
- Using the same monitoring well installation procedures described in the Work Plan, advance up to two monitoring wells (1 proposed and 1 contingent) down-gradient of MW-01 to determine the lateral extent of petroleum hydrocarbons in groundwater. The approximate locations of the proposed monitoring wells are shown on **Figure 3**.

5.2 PROJECT IMPLEMENTATION SCHEDULE

The implementation of the above recommendations is tentative and is contingent on acceptance of the recommendations by the COGCC and acceptance by the third-party property owners. It is anticipated the recommended assessment activities can be implemented within 30 days from approval by the COGCC and third-party property owners.

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6.0 LIMITATIONS

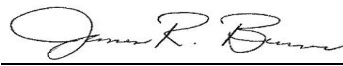
This report was prepared in accordance with the scope of work outlined in Stantec's contract and with generally accepted professional engineering and environmental consulting practices existing at the time this report was prepared and applicable to the location of the site. It was prepared for the exclusive use of Chevron for the express purpose stated above. Any re-use of this report for a different purpose or by others not identified above shall be at the user's sole risk without liability to Stantec. To the extent that this report is based on information provided to Stantec by third parties, Stantec may have made efforts to verify this third party information, but Stantec cannot guarantee the completeness or accuracy of this information. The opinions expressed and data collected are based on the conditions of the site existing at the time of the field investigation. No other warranties, expressed or implied are made by Stantec.

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(signature)

Brent Lucyk
Senior Geologist

Reviewed by 
(signature)

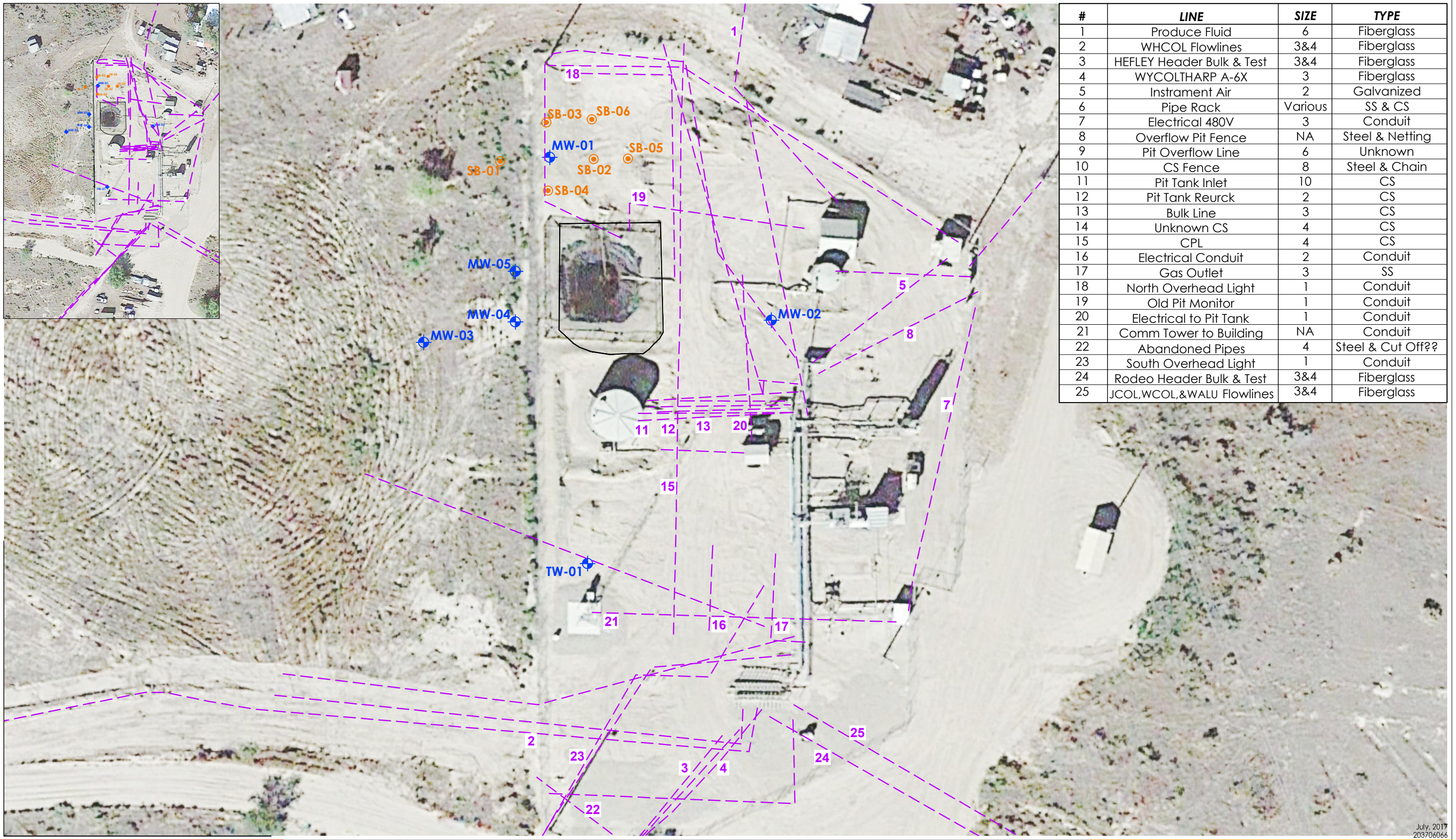
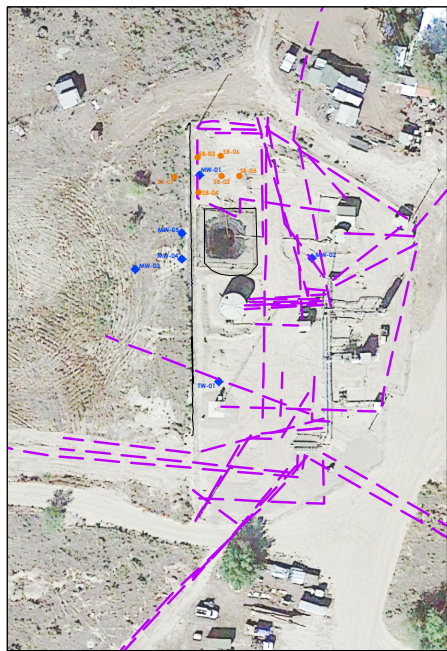
Marisa Kaffenberger, PE
Senior Engineer

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Jim Burns, PE
Principal Engineer

FIGURES

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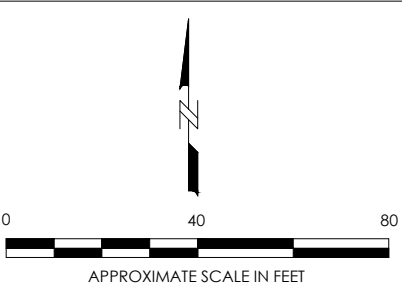
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1	Produce Fluid	6	Fiberglass
2	WHCOL Flowlines	3&4	Fiberglass
3	HEFLEY Header Bulk & Test	3&4	Fiberglass
4	WYCOLTHARP A-6X	3	Fiberglass
5	Instrument Air	2	Galvanized
6	Pipe Rack	Various	SS & CS
7	Electrical 480V	3	Conduit
8	Overflow Pit Fence	NA	Steel & Netting
9	Pit Overflow Line	6	Unknown
10	CS Fence	8	Steel & Chain
11	Pit Tank Inlet	10	CS
12	Pit Tank Reurck	2	CS
13	Bulk Line	3	CS
14	Unknown CS	4	CS
15	CPL	4	CS
16	Electrical Conduit	2	Conduit
17	Gas Outlet	3	SS
18	North Overhead Light	1	Conduit
19	Old Pit Monitor	1	Conduit
20	Electrical to Pit Tank	1	Conduit
21	Comm Tower to Building	NA	Conduit
22	Abandoned Pipes	4	Steel & Cut Off??
23	South Overhead Light	1	Conduit
24	Rodeo Header Bulk & Test	3&4	Fiberglass
25	JCOL,WCOL,&WALU Flowlines	3&4	Fiberglass



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Legend

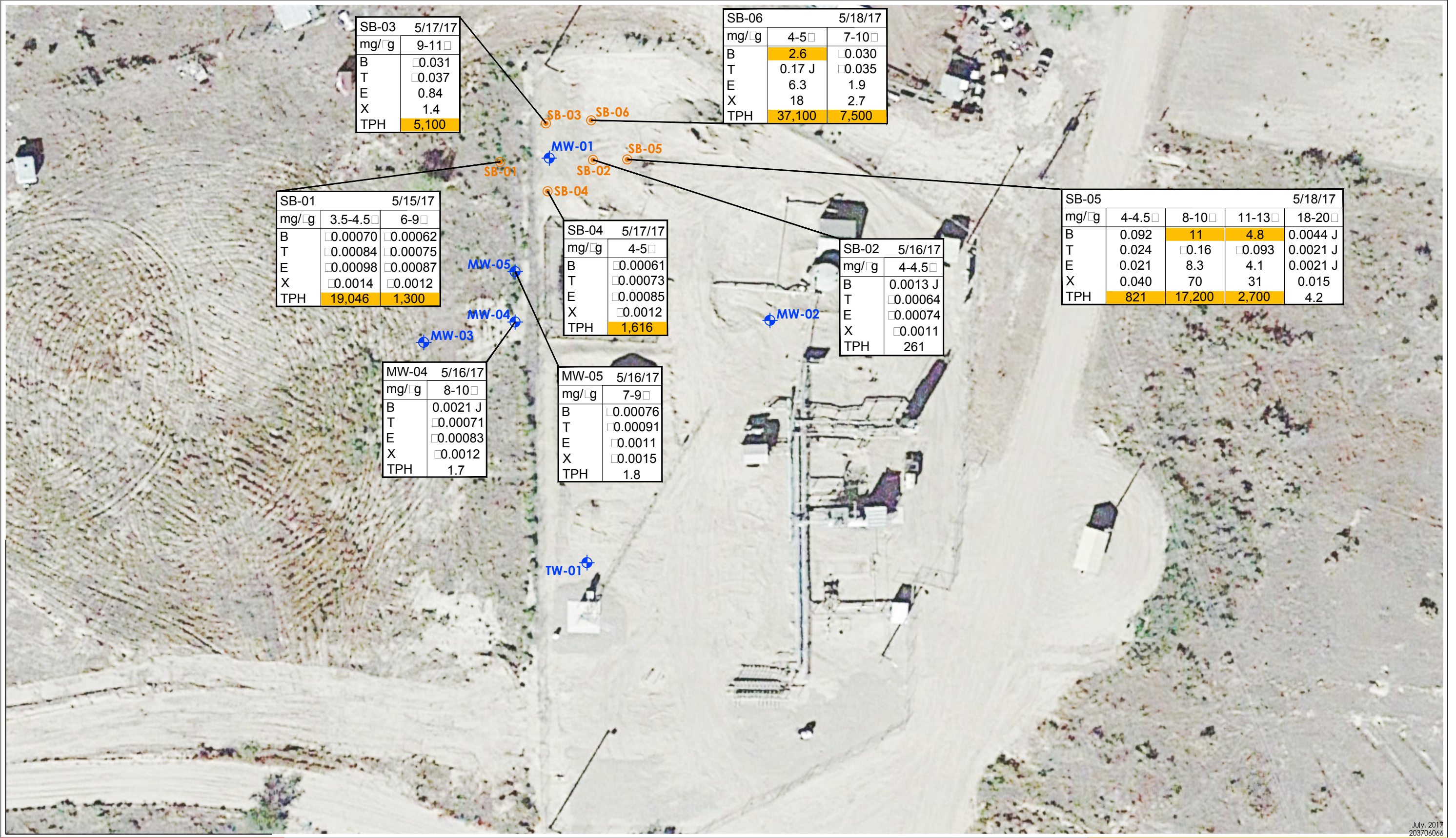
- FINAL EXCAVATION
- SUBSURFACE UTILITIES
- MONITORING WELL
- SOIL BORING



Client/Project
Chevron EMC
RANGELY
Figure No.
1
Title
SITE PLAN

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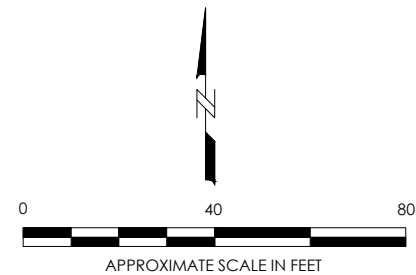
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Legend

- MW-01** Monitoring Well
SB-01 Soil Boring
mg/kg milligrams per kilogram
J Analyte detected below quantitation limit

19,046 Exceeds the Colorado Oil and Gas Conservation Commission (COGCC) Series 900 Allowable Concentration

- B Benzene
T Toluene
E Ethylbenzene
X Total Xylenes
TPH Total Petroleum Hydrocarbons

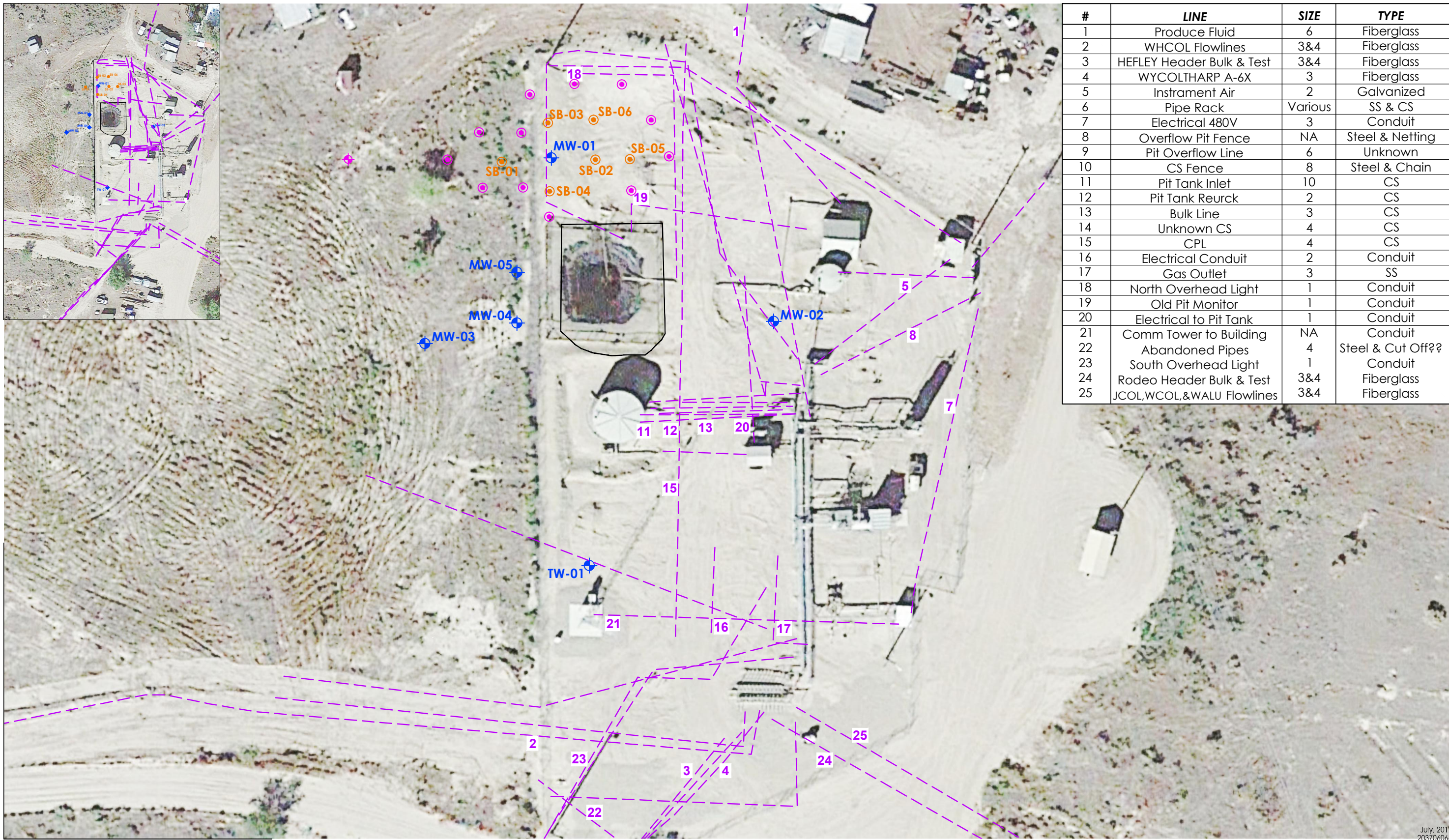


Client/Project
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RANGELY

Figure No.
2

Title
SOIL ANALYTICAL DATA

U:\203706066\05 REPORT_DELIV\DRAWING_DESIGN\DWG_203706066_RANGELY_47WP_2017.DWG
7/21/2017 1:45 PM



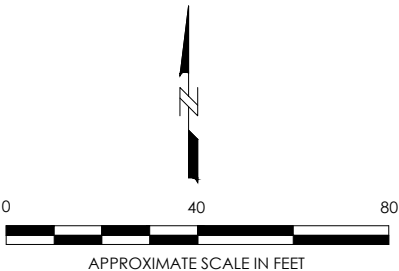
#	LINE	SIZE	TYPE
1	Produce Fluid	6	Fiberglass
2	WHCOL Flowlines	3&4	Fiberglass
3	HEFLEY Header Bulk & Test	3&4	Fiberglass
4	WYCOLTHARP A-6X	3	Fiberglass
5	Instrument Air	2	Galvanized
6	Pipe Rack	Various	SS & CS
7	Electrical 480V	3	Conduit
8	Overflow Pit Fence	NA	Steel & Netting
9	Pit Overflow Line	6	Unknown
10	CS Fence	8	Steel & Chain
11	Pit Tank Inlet	10	CS
12	Pit Tank Reurck	2	CS
13	Bulk Line	3	CS
14	Unknown CS	4	CS
15	CPL	4	CS
16	Electrical Conduit	2	Conduit
17	Gas Outlet	3	SS
18	North Overhead Light	1	Conduit
19	Old Pit Monitor	1	Conduit
20	Electrical to Pit Tank	1	Conduit
21	Comm Tower to Building	NA	Conduit
22	Abandoned Pipes	4	Steel & Cut Off??
23	South Overhead Light	1	Conduit
24	Rodeo Header Bulk & Test	3&4	Fiberglass
25	JCOL,WCOL,&WALU Flowlines	3&4	Fiberglass



2000 South Colorado Blvd., Suite 2-300
Denver, CO 80222
www.stantec.com

Legend

- FINAL EXCAVATION
- SUBSURFACE UTILITIES
- MW-01 MONITORING WELL
- SB-01 SOIL BORING
- PROPOSED SOIL BORING
- PROPOSED MONITORING WELL



Client/Project
Chevron EMC
RANGELY

Figure No.
3

Title
SITE PLAN WITH PROPOSED BORING
AND MONITORING WELL LOCATIONS

July, 2017
203706066

TABLES

Table 1
Summary of Groundwater Well Construction Details
Chevron Rangely CS47, Rangely, Colorado

Well Number	Date Installed	Depth Drilled (feet bgs)	Well Depth (feet below TOC)	TOC Elevation (feet AMSL)	Ground Elevation (feet AMSL)	Casing Stickup (feet)	Screen Interval (feet bgs)
MW1	1/12/2017	20.0	19.8	5201.89	5199.60	2.3	3-20
MW2	1/12/2017	20.0	21.6	5201.69	5199.10	2.6	4-20
MW3	1/12/2017	20.0	21.9	5199.68	5197.80	1.9	5-19.5
MW4	5/16/2017	15.5	17.7	5201.36	5198.27	3.1	5-15
MW5	5/16/2017	20.0	23.1	5200.96	5198.30	2.7	5-19.5
TW1	9/10/2015	16.5	19.4	5201.04	5197.66	3.4	1-16

Notes:

bgs: Below ground surface

TOC: Top of Casing

AMSL: Above mean sea level

Table 2
Summary of Depth to Groundwater and PSH Thickness
Chevron Rangely CS47, Rangely, Colorado

Well Number	Date Measured	TOC Elevation (feet AMSL)	Groundwater Elevation (feet AMSL)	Depth to Water (feet below TOC)	PSH Thickness (feet)	Potentiometric Surface (ASML)
MW-1	1/16/2017	5201.89	5188.10	13.79	0.05	5188.14
	6/12/2017		5188.74	13.15	0.01	5188.75
MW-2	1/16/2017	5201.69	5188.79	12.90	0.00	5188.79
	6/12/2017		5189.25	12.44	0.00	5189.25
MW-3	1/16/2017	5199.68	5187.54	12.14	0.00	5187.54
	6/12/2017		5188.25	11.43	0.00	5188.25
MW4	5/25/2017	5201.36	5188.45	12.91	0.00	5188.45
	6/12/2017		5188.45	12.91	0.00	5188.45
MW5	5/25/2017	5200.96	5188.57	12.39	0.00	5188.57
	6/12/2017		5188.57	12.39	0.00	5188.57
TW-1	1/16/2017	5201.04	5188.02	13.02	0.00	5188.02
	6/12/2017		5188.52	12.52	0.00	5188.52

Notes:

bgs: Below ground surface

TOC: Top of Casing

AMSL: Above mean sea level

PSH: Phase-separated hydrocarbons

Table 3
Groundwater Sample Results
Chevron Rangely CS47, Rangely, Colorado

Sample Location	Sample Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	TPH-GRO (C6 - C10)	TPH-DRO (C10 - C28)	Chloride ¹	Sulfate ¹
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
COGCC Allowable Concentrations and Levels		0.005	1.0	0.7	10	--	--	38.3	2,487
MW-1	5/25/2017	<0.010	<0.010	<0.010	<0.030	<0.20	38	1,100	1,800
MW-2	5/25/2017	<0.0010	<0.0010	<0.0010	<0.0030	<0.20	1.6	310	1,500
MW-3	5/25/2017	<0.0010	<0.0010	<0.0010	<0.0030	<0.20	0.60	750	1,900
MW-3D	5/25/2017	<0.0010	<0.0010	<0.0010	<0.0030	<0.20	1.2	730	1,700
MW-4	5/25/2017	<0.0010	<0.0010	<0.0010	<0.0030	<0.20	<0.50	1,500	1,600
MW-5	5/25/2017	<0.0010	<0.0010	<0.0010	<0.0030	<0.20	0.65	680	2,000
TW-1	5/25/2017	<0.0010	<0.0010	<0.0010	<0.0030	<0.20	<0.50	320	1,300

Notes:

Concentrations in **BOLD** are above the Colorado Oil and Gas Conservation Commission (COGCC) Series 900 Allowable Concentrations.

TPH: total petroleum hydrocarbons

GRO: gasoline range organics

DRO: diesel range organics

TDS: Total Dissolved Solids

mg/L: milligrams per liter

-- : Not available

<: represent concentrations below the test method limit unless otherwise noted

¹: Criteria for chloride and sulfate are based on COGCC Allowable Concentrations of 1.25 x's background.

Concentrations for up-gradient well MW-48 (6/6/12) used as background concentrations.

Table 4
Soil Sample Results for Organic Compounds
Chevron Rangely CS47, Rangely, Colorado

Sample ID	Sample Depth (feet bgs)	Sample Date	TPH GRO (C6-C10)	TPH DRO (C10-C28)	Total TPH	Benzene	Toluene	Ethylbenzene	Total Xylenes	Acenaphthene	Anthracene	Benzo(a) anthracene	Benzo(a) pyrene	Benzo(b) fluoranthene	Benzo(k) fluoranthene	Chrysene	Dibenzo(a,h) anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) pyrene	Naphthalene	Pyrene
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
COGCC Allowable Concentrations and Levels			--	--	500	0.17	85	100	175	1,000	1,000	0.22	0.022	0.22	2.2	22	0.022	1,000	1,000	0.22	23	1,000
Analytical Method			SW8015	SW8015	SW8015	SW8260	SW8260	SW8260	SW8260	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270	SW8270
SB01	3.5-4.5	05/15/17	46	19,000	19,046	<0.00070	<0.00084	<0.00098	<0.0014	<0.027	<0.027	<0.088	1.3	<0.066	<0.049	2.7	<0.088	<0.060	<0.060	<0.044	0.080 J	<0.033
SB01	6-9	05/15/17	0.064	1,300	1,300	<0.00062	<0.00075	<0.00087	<0.0012	<0.0054	<0.0054	<0.017	0.10	<0.013	<0.0096	0.30	<0.017	0.055	<0.012	<0.0086	<0.0064	0.035 J
MW4	8-10	05/16/17	0.21	1.5 J	1.7	0.0021 J	<0.00071	<0.00083	<0.0012	<0.00054	0.0050	0.0022 J	<0.0011	<0.0013	<0.00097	0.0044	<0.0017	0.0077	<0.0012	<0.00086	<0.00065	0.0064
MW5	7-9	05/16/17	0.19	1.6 J	1.8	<0.00076	<0.00091	<0.0011	<0.0015	<0.00067	<0.00067	<0.0021	<0.0013	0.0017 J	0.0018 J	<0.0011	<0.0021	0.0032 J	<0.0015	<0.0011	0.0025 J	0.0032 J
SB02	4-4.5	05/16/17	1.3	260	261	0.0013 J	<0.00064	<0.00074	<0.0011	<0.0062	0.011 J	<0.020	<0.012	<0.015	<0.011	0.048	<0.020	0.017 J	<0.014	<0.010	<0.0075	0.018 J
SB03	9-11	05/17/17	1,000	4,100	5,100	<0.031	<0.037	0.84	1.4	0.11	0.34	0.18	<0.011	<0.014	<0.010	0.20	<0.018	<0.012	0.095	<0.0090	0.26	<0.0068
SB04	4-5	05/17/17	16	1,600	1,616	<0.00061	<0.00073	<0.00085	<0.0012	<0.0063	<0.0063	<0.020	<0.013	<0.015	<0.011	0.17	<0.020	<0.014	<0.014	<0.010	<0.0076	<0.0076
SB05	4-4.5	05/18/17	1.2	820	821	0.092	0.024	0.021	0.040	<0.0060	<0.0060	<0.019	<0.012	<0.014	<0.011	<0.0096	<0.019	<0.013	<0.013	<0.0096	<0.0072	<0.0072
SB05	8-10	05/18/17	2,200	15,000	17,200	11	<0.16	8.3	70	0.14	0.27	0.41	<0.013	<0.015	<0.011	0.18	<0.020	0.11	0.19	<0.010	0.0080 J	0.11
SB05	11-13	05/18/17	1,300	1,400	2,700	4.8	<0.093	4.1	31	0.066	0.11	0.12	<0.013	<0.015	<0.011	0.099	<0.020	0.061	0.082	<0.010	0.48	0.075
SB05	18-20	05/18/17	1.3	2.9	4.2	0.0044 J	0.0021 J	0.0021 J	0.015	0.0020 J	0.0016 J	0.0023 J	0.0014 J	0.0019 J	0.0012 J	0.0033 J	<0.0018	0.0056	0.0025 J	0.0013 J	0.0045	0.0063
SB06	4-5	05/18/17	1,100	36,000	37,100	2.6	0.17 J	6.3	18	0.44	0.93	1.1	<0.043	<0.051	<0.038	1.1	<0.068	0.27	0.35	<0.034	1.8	0.30
SB06	7-10	05/18/17	1,300	6,200	7,500	<0.030	<0.035	1.9	2.7	<0.0056	0.21	0.30	<0.011	<0.013	<0.010	<0.0090	<0.018	<0.012	0.17	<0.0090	0.84	<0.0067

Notes:
Concentrations in **BOLD** are above the Colorado Oil and Gas Conservation Commission (COGCC) Series 900 Allowable Concentrations.
bgs: below ground surface
TPH: total petroleum hydrocarbons
GRO: gasoline range organics
DRO: diesel range organics
ORO: motor oil range organics
mg/kg: milligrams per kilogram
-- : Not available
<: represent concentrations below the test method limit unless otherwise noted
J: analyte detected below quantitation limit

Table 5
Soil Sample Results for Inorganic Compounds and Metals
Chevron Rangely CS47, Rangely, Colorado

Sample ID		Sample Depth (feet bgs)	Sample Date	Percent Moisture	Electrical Conductivity	pH	Temp Deg C @pH	Sodium Absorption Ratio	Arsenic ¹	Barium, Total	Boron	Cadmium	Calcium	Chromium	Chromium (III)	Chromium (VI)	Copper	Lead	Magnesium	Mercury	Nickel	Selenium	Silver	Sodium	Zinc
				wt (%)	(mmhos/cm @25°C)	(STD Units)	°C	meq/meq	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/L)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/L)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/L)
COGCC Allowable Concentrations and Levels				--	<4	6-9	--	<12	0.39	15,000	2	70	--	120,000	120,000	23	3,100	400	--	23	1,600	390	390	--	23,000
Project-Specific Target Concentration				--	--	--	--	--	10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Analytical Method				ASTM D2216	LaDNR-29B EC	SW9045B	SW9045B	La29B SAR	SW6020	LADNR Ba	SW6020	SW6020	La29B-6020	SW6020	Calculation	SW7196	SW6020	SW6020	La29B-6020	SW7471A	SW6020	SW6020	SW6020	La29B-6020	SW6020
SB01	3.5-4.5	05/15/17	18.2	14.9	7.57 H	21.9 H	11.6	8.16	167	12.9	0.448 J	658	28.1	28.1	<0.359	22.8	148	374	0.337	45.8	1.05	0.0978 J	1,510	131	
SB01	6-9	05/15/17	6.85	5.29	8.67 H	21.9 H	5.89	2.33	27.9	4.34	0.108 J	631	4.70	4.70 J	<0.320	5.44	6.20	37.1	0.00563	6.11	0.703	<0.0802	563	27.8	
MW4	8-10	05/16/17	7.37	11.4	8.42 H	21.7 H	30.0	5.53	147	3.97	0.213 J	183	6.32	6.32	<0.321	4.86	6.19	44.0	0.0105	7.56	0.765	<0.0817	1,740	27.9	
MW5	7-9	05/16/17	25.1	11.4	8.11 H	21.8 H	17.8	3.75	112	6.76	0.179 J	297	5.97	5.97 J	<0.395	7.07	6.71	64.9	0.00855	7.97	0.750	<0.0992	1,300	31.7	
SB02	4-4.5	05/16/17	20.1	3.34	8.84 H	21.4 H	10.6	5.26	186	13.0	0.197 J	134	15.6	15.6	<0.376	10.4	10.2	17.2	0.0121	15.7	1.33	<0.0943	490	43.8	
SB03	9-11	05/17/17	11.4	5.03	8.56 H	21.4 H	5.56	1.70	113	6.07	0.124 J	336	6.05	6.05	<0.334	5.15	5.49	178	0.0137	6.11	0.617	<0.0831	507	27.2	
SB04	4-5	05/17/17	20.8	6.13	8.41 H	21.4 H	4.93	5.35	149	16.0	0.201 J	575	14.1	14.1	<0.379	10.5	11.1	231	0.0151	13.8	1.32	<0.0964	553	47.5	
SB05	4-4.5	05/18/17	17.3	6.87	8.17 H	21.4 H	17.5	4.21	135	12.8	0.247 J	164	8.68	8.68	<0.366	10.6	10.1	57.2	0.0236	11.2	1.16	<0.0918	1,020	48.2	
SB05	8-10	05/18/17	20.6	8.98	7.96 H	21.7 H	19.0	7.07	154	14.4	0.294 J	196	8.98	8.98	<0.375	11.6	14.3	114	0.0306	12.9	0.989	<0.0960	1,350	56.1	
SB05	11-13	05/18/17	20.7	6.65	8.29 H	21.4 H	13.0	6.92	229	12.1	0.283 J	220	10.8	10.8	<0.370	11.6	36.6	86.2	0.0664	13.3	1.16	<0.0920	895	75.5	
SB05	18-20	05/18/17	13.3	3.51	8.62 H	21.5 H	6.96	5.74	464	11.3	0.261 J	191	11.9	11.9	<0.348	13.0	15.1	53.5	0.0280	17.5	1.88	0.100 J	422	82.3	
SB06	4-5	05/18/17	29.7	9.44	9.14 H	21.8 H	19.8	6.79	255	17.5	0.397 J	321	21.7	21.8	<0.422	17.0	62.0	47.7	0.139	35.1	1.27	<0.107	1,440	111	
SB06	7-10	05/18/17	11.2	1.98	8.99 H	21.6 H	17.4	2.28	35.6	4.97	0.101 J	21.7	4.48	4.48 J	<0.338	5.34	5.10	6.36	0.00767	6.07	0.589	<0.0858	358	24.4	

Notes:
Except where otherwise noted, concentrations in **BOLD** are above the Colorado Oil and Gas Conservation Commission (COGCC) Series 900 Allowable Concentrations.
bgs: below ground surface
wt (%): percent weight
mmhos/cm: millimhos per centimeter
STD Units: Standard Units
°C: degrees Celcius
meq/meq: milliequivalents per milliequivalent
mg/kg: milligrams per kilogram
mg/L: milligrams per liter
-- : Not available
<: represent concentrations below the test method limit unless otherwise noted
J: analyte detected below quantitation limit
H: analyzed outside of holding time
¹: For arsenic, concentrations in **BOLD** are above the project-specific target concentration. The default COGCC Series 900 Allowable Concentration for arsenic is 0.39 mg/kg.

APPENDIX A

WELL PERMITS/NOTICE OF INTENT



COLORADO
Division of Water Resources
Department of Natural Resources

WELL PERMIT NUMBER 306065-
RECEIPT NUMBER 3680575A

ORIGINAL PERMIT APPLICANT(S)

CHEVRON ENVIRONMENTAL MGMT COMPANY

APPROVED WELL LOCATION

Water Division: 6 Water District: 43
Designated Basin: N/A
Management District: N/A
County: RIO BLANCO
Parcel Name: N/A

AUTHORIZED AGENT

STANTEC CONSULTING SERVICE (BEALL, CHRISTOPHER)

SE 1/4 SW 1/4 Section 35 Township 2.0 N Range 102.0 W Sixth P.M.

UTM COORDINATES (Meters, Zone:13, NAD83)

Easting: 175016.0 Northing: 4445237.0

PERMIT TO USE AN EXISTING WELL

ISSUANCE OF THIS PERMIT DOES NOT CONFER A WATER RIGHT

CONDITIONS OF APPROVAL

- 1) This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of this permit does not ensure that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.
- 2) The construction of this well shall be in compliance with the Water Well Construction Rules 2 CCR 402-2, unless approval of a variance has been granted by the State Board of Examiners of Water Well Construction and Pump Installation Contractors in accordance with Rule 18.
- 3) Approved pursuant to CRS 37-92-602(3)(b)(I) for uses as described in CRS 37-92-602(1)(f). Use of this well is limited to monitoring water levels and/or water quality sampling.
- 4) Approved for the use of an existing well acknowledged for construction under monitoring hole notice 56620-MH, and known as MW4.
- 5) This well must be equipped with a locking cap or seal to prevent well contamination or possible hazards as an open well. The well must be kept capped and locked at all times except during sampling or measuring.
- 6) Records of water level measurements and water quality analyses shall be maintained by the well owner and submitted to the Division of Water Resources upon request.
- 7) Upon conclusion of the monitoring program the well owner shall plug this well in accordance with Rule 16 of the Water Well Construction Rules. A Well Abandonment Report must be completed and submitted to the Division of Water Resources within 60 days of plugging.
- 8) The owner shall mark the well in a conspicuous place with the well permit number and name of aquifer as appropriate, and shall take necessary means and precautions to preserve these markings.
- 9) This well must have been constructed by or under the supervision of a licensed well driller or other authorized individual according to the Water Well Construction Rules.
- 10) This well must be located not more than 200 feet from the location specified on this permit.

NOTE: Issuance of this permit does not guarantee that this well can be converted to a production well under a future permit. Additionally, pursuant to Rule 14.2 of the Water Well Construction Rules (2 CCR 402-2), monitoring holes constructed pursuant to a monitoring hole notice shall not be converted to a production well. (Upon obtaining a permit from the State Engineer, a monitoring hole may be converted to a monitoring well, recovery well for remediation of the aquifer, or a dewatering system for dewatering the aquifer.)

Issued By AILIS THYNE

Date Issued: 7/12/2017

Expiration Date: N/A



COLORADO
Division of Water Resources
Department of Natural Resources

WELL PERMIT NUMBER 306066-
RECEIPT NUMBER 3680575B

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Designated Basin: N/A
Management District: N/A
County: RIO BLANCO
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STANTEC CONSULTING SERVICE (BEALL, CHRISTOPHER)

SE 1/4 SW 1/4 Section 35 Township 2.0 N Range 102.0 W Sixth P.M.

UTM COORDINATES (Meters, Zone:13, NAD83)

Easting: 175016.0 Northing: 4445244.0

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- 3) Approved pursuant to CRS 37-92-602(3)(b)(I) for uses as described in CRS 37-92-602(1)(f). Use of this well is limited to monitoring water levels and/or water quality sampling.
- 4) Approved for the use of an existing well acknowledged for construction under monitoring hole notice 56620-MH, and known as MW5.
- 5) This well must be equipped with a locking cap or seal to prevent well contamination or possible hazards as an open well. The well must be kept capped and locked at all times except during sampling or measuring.
- 6) Records of water level measurements and water quality analyses shall be maintained by the well owner and submitted to the Division of Water Resources upon request.
- 7) Upon conclusion of the monitoring program the well owner shall plug this well in accordance with Rule 16 of the Water Well Construction Rules. A Well Abandonment Report must be completed and submitted to the Division of Water Resources within 60 days of plugging.
- 8) The owner shall mark the well in a conspicuous place with the well permit number and name of aquifer as appropriate, and shall take necessary means and precautions to preserve these markings.
- 9) This well must have been constructed by or under the supervision of a licensed well driller or other authorized individual according to the Water Well Construction Rules.
- 10) This well must be located not more than 200 feet from the location specified on this permit.

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Issued By AILIS THYNE

Date Issued: 7/12/2017

Expiration Date: N/A

Colorado Department of Natural Resources

Colorado.gov | Contact Us



Colorado's Well Permit Search

THIS PAGE IS NOT THE ACTUAL PERMIT

The information contained on this page is a summary of the permit file and may not reflect all details of the well permit. ([Full Disclaimer](#))

Permit Issued; Completion Status Unknown

Last Refresh: 5/10/2017 12:02:15 AM

Receipt:	0056620A	Division:	6
Permit #:	56620-MH -	Water District:	43
Well Name / #:		County:	RIO BLANCO
Designated Basin:		Management District:	
Case Number:			
WDID:			

[-] **Imaged Documents - Permit File**

Document Name	Date Imaged	Annotated
---------------	-------------	-----------

[-] **Applicant/Contact**

Applicant/Contact Name	Mailing Address	City/State/Zip
CHEVRON ENVIRONMENTAL MGMT COMPANY	C/O STANTEC 2000 S COLORADO BLVD STE 2-300	DENVER, CO 80222-

[-] **Location Information****Approved Well Location:**

Q40	Q160	Section	Township	Range	PM	Footage from Section Lines
		35	2.0N	102.0W	Sixth	
Northing (UTM y):		4445763.0		Easting (UTM x):		175178.4
Location Accuracy:		Spotted from quarters				

Subdivision Name

Filing	Block	Lot
--------	-------	-----

Parcel ID:**Acres in Tract:**

[-] Permit Details**Date Issued:** 05/08/2017 **Date Expires:** 08/06/2017**Uses** (See [Imaged Documents](#) for more information)**General Use(s):** OTHER**Aquifer(s):** ALL UNNAMED AQUIFERS**Special Use:** MONITORING WELL**Area which may be irrigated:****Annual volume of appropriation:****Statute:****Cross Reference Permit(s):** Permit Number Receipt**Comments:** 10 holes**[-] Construction/Usage Details****Well Construction Date:****Pump Installation Date:****Well Plugged:****1st Beneficial Use:****Elevation Depth Perforated Casing (Top) Perforated Casing (Bottom) Static Water Level Pump Rate****[-] Application/Permit History**

Application Received 05/08/2017

Permit Issued 05/08/2017

Disclaimer***The information contained on this page is a summary of the permit file and may not reflect all details of the well permit. THIS PAGE IS NOT THE ACTUAL PERMIT.****This page should not be used as a basis for any legal consideration, to determine the allowed uses of the well, to determine construction information, or to determine the terms and conditions under which the well can operate.** The complete well permit file should be viewed to obtain details on the allowed uses and other relevant information. A complete copy of this file is available in the "Imaged Documents" section of this page, and can be viewed by opening all of the documents listed under that section (documents will open as pdf files).Note that all of the terms and conditions under which a well can operate, particularly for non-exempt wells, may not be specified on the well permit. Wells may also be subject to relevant statutes, rules and decrees. To learn more about well permitting in Colorado, please visit [DWR's Well Permitting Page](#). If you have any questions about this well permit file, please contact the [DWR Ground Water Information Desk](#).



APPENDIX B
BORING LOGS

PROJECT: **CS-47**
 LOCATION: **Rangely, CO**
 PROJECT NUMBER: **203706066**
 DRILLING: STARTED **5/15/17** COMPLETED: **5/16/17**
 INSTALLATION: STARTED COMPLETED:
 DRILLING COMPANY: **Cascade**
 DRILLING EQUIPMENT: **Geoprobe 7730 DT**
 DRILLING METHOD: **Airknife/HSA/DP**
 SAMPLING EQUIPMENT: **Acetate liner/HA**

WELL / PROBEHOLE / BOREHOLE NO:



PAGE 1 OF 1

MW-4

NORTHING (ft): **1,294,649.33** EASTING (ft): **2,073,632.94**
 GROUND ELEV (ft): **5,198.27** TOC ELEV (ft): **5201.36**
 INITIAL DTW (ft): **9** BOREHOLE DEPTH (ft): **18**
 STATIC DTW (ft): **12.95** WELL DEPTH (ft):
 WELL CASING DIA. (in): **2** BOREHOLE DIA.(in): **6.5**
 LOGGED BY: **MHS** CHECKED BY: **BAL**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction
1300		GC	CLAYEY GRAVEL WITH SOME FINE SAND ; GC; light brown; fine to coarse-grained; no moisture; Hand Auger							
		SC	CLAYEY SAND ; SC; light brown; fine-grained; slightly moist; no hydrocarbon odor; well graded; Hand Auger					4.0		PVC 2" Riser Bentonite
5		SC	CLAYEY SAND ; SC; light brown; fine-grained; slightly moist; well graded					2.3	5	
1358										
10			NO RECOVERY							
		GW-SW	SANDY GRAVEL WITH SOME FINES ; GW-SW; light brown to gray; fine to medium-grained; dry; well graded							
		GW-SW	SANDY GRAVEL ; GW-SW; dark brown to gray; fine to coarse-grained; saturated; well graded					1.8		
15			NO RECOVERY					0.9	15	
		GW-SW	SANDY GRAVEL ; GW-SW; dark brown to gray; fine to coarse-grained; saturated; well graded					1.2		
										Filter pack material:Silica Sand 2" Filter Pack Screen Bottom of Well

MW4 1402

Borehole terminated at 18 feet.

PROJECT: **CS-47**
 LOCATION: **Rangely, CO**
 PROJECT NUMBER: **203706066**

DRILLING: STARTED **5/15/17** COMPLETED: **5/16/17**
 INSTALLATION: STARTED COMPLETED:
 DRILLING COMPANY: **Cascade**
 DRILLING EQUIPMENT: **Geoprobe 7730 DT**
 DRILLING METHOD: **Airknife/HSA/DP**
 SAMPLING EQUIPMENT: **Acetate liner/HA**

WELL / PROBEHOLE / BOREHOLE NO:




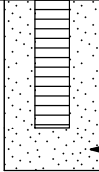
PAGE 1 OF 2


MW-5






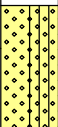



NORTHING (ft): **1,294,671.06** EASTING (ft): **2,073,633.12**
 GROUND ELEV (ft): **5,198.30** TOC ELEV (ft): **5200.95**
 INITIAL DTW (ft): **9** BOREHOLE DEPTH (ft): **18**
 STATIC DTW (ft): **12.5** WELL DEPTH (ft):
 WELL CASING DIA. (in): **2** BOREHOLE DIA.(in): **6.5**
 LOGGED BY: **MHS** CHECKED BY: **BAL**


Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)	Well Construction	
5		GC	GRAVELLY CLAY ; GC; light brown; fine to coarse-grained; slightly moist; Hand Auger		MW5 1010	0.8					
		SC	SANDY CLAY ; SC; light brown; fine-grained; slightly moist; no hydrocarbon odor; Hand Auger						1.6		
		SC	SANDY CLAY ; SC; light brown; fine-grained; dry; Hand Auger					1.7			
			NO RECOVERY					5			
10		GW-SW	GRAVELLY SAND WITH SOME FINES ; GW-SW; light brown; fine to medium-grained; moist; no hydrocarbon odor; well graded				0.8				
		SC	SANDY CLAY ; SC; light brown; fine-grained; low plasticity; moist; no hydrocarbon odor						4.6		
		SC	SANDY CLAY ; SC; light brown; fine-grained; low plasticity; saturated; no hydrocarbon odor						7.7		
			NO RECOVERY					3.5			
15		SPG	SANDY GRAVEL ; SPG; light brown and gray; fine to medium-grained; saturated; no hydrocarbon odor								
		SW-GW	SANDY GRAVEL ; SW-GW; dark gray; fine to coarse-grained; saturated						5.8		
		GW-SW	GRAVELLY SAND ; GW-SW; gray; fine to medium-grained; saturated; no hydrocarbon odor						3.6		
		GW-SW	GRAVELLY SAND ; GW-SW; gray; fine to coarse-grained					2.8			



PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		<div>  </div>	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/15/17 COMPLETED: 5/16/17		PAGE 2 OF 2 MW-5	
INSTALLATION: STARTED COMPLETED:		NORTHING (ft): 1,294,671.06 EASTING (ft): 2,073,633.12	
DRILLING COMPANY: Cascade		GROUND ELEV (ft): 5,198.30 TOC ELEV (ft): 5200.95	
DRILLING EQUIPMENT: Geoprobe 7730 DT		INITIAL DTW (ft): 9 BOREHOLE DEPTH (ft): 18	
DRILLING METHOD: Airknife/HSA/DP		STATIC DTW (ft): 12.5 WELL DEPTH (ft):	
SAMPLING EQUIPMENT: Acetate liner/HA		WELL CASING DIA. (in): 2 BOREHOLE DIA.(in): 6.5	
		LOGGED BY: MHS CHECKED BY: BAL	


Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace	PID (units)	Depth (feet)	Well Construction
20			Borehole terminated at 18 feet.								 <div>Bottom of Well</div>
25											
30											
35											










PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 1 OF 2 SB01	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/16/17	COMPLETED: 5/17/17	NORTHING (ft): 1,294,717.21	EASTING (ft): 2,073,626.48
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,198.20	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 9	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): Not Encountered	WELL DEPTH (ft):
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL


Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
		GC	SANDY GRAVEL WITH CLAY ; GC; light brown; fine to coarse-grained; slightly moist; no hydrocarbon odor; Hand Auger					13.7	
		SC	SANDY CLAY ; SC; dark brown; medium plasticity; moist; hydrocarbon odor; black staining; well graded; Hand Auger		SB01 1622			175.0	
5		SW-SM	SAND WITH SOME FINES ; SW-SM; light brown; slightly moist; hydrocarbon odor; black staining; well graded; Hand Auger					249.5	5
		SW-SM	SAND WITH SOME FINES ; SW-SM; light brown; fine-grained; slightly moist; hydrocarbon odor; black staining; well graded		SB01 1715			5.2	
		SW-SM	SAND WITH SOME FINES ; SW-SM; light brown; fine-grained; saturated; hydrocarbon odor; black staining; well graded					101.5	
10									10
		SW-SM	SAND WITH SOME FINES ; SW-SM; gray; fine-grained; saturated; hydrocarbon odor; black staining; well graded					30.1	
		GW-SW	SANDY GRAVEL ; GW-SW; gray; fine to coarse-grained; saturated; hydrocarbon odor; black staining; well graded					10.1	
15		SW-GW	SANDY GRAVEL ; SW-GW; dark gray; fine to medium-grained; saturated; hydrocarbon odor; black staining; well graded					3.5	15
		GW-SW	SANDY GRAVEL ; GW-SW; dark gray; fine to coarse-grained; hydrocarbon odor; well graded						



PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 2 OF 2 SB01	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/16/17	COMPLETED: 5/17/17	NORTHING (ft): 1,294,717.21	EASTING (ft): 2,073,626.48
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,198.20	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 9	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): Not Encountered	WELL DEPTH (ft):
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL


Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
20		GW-SW	Borehole terminated at 20 feet.					5.6	20
25									
30									
35									








PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 1 OF 2 SB02	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/16/17	COMPLETED: 5/17/17	NORTHING (ft): 1,294,718.13	EASTING (ft): 2,073,666.36
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,197.84	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 6.5	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): ---	WELL DEPTH (ft):
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL


Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
		GW-SW	SANDY GRAVEL ; GW-SW; light brown; fine to coarse-grained; slightly moist; no hydrocarbon odor; well graded; Hand Auger						
		CL	SANDY/CLAYEY ; CL; dark brown; fine-grained; medium plasticity; slightly moist; hydrocarbon odor; black staining; Hand Auger					57	
5			NO RECOVERY		SB02 1715				5
		SC	SANDY/CLAYEY ; SC; light brown; medium plasticity; saturated; hydrocarbon odor; black staining					1177	
		SW-SM	SAND ; SW-SM; fine-grained; saturated; hydrocarbon odor; black staining; well graded					1847	
10			NO RECOVERY						10
		SC	SANDY/CLAYEY ; SC; saturated; hydrocarbon odor; black staining; sheen and product					974	
		GW-SW	SANDY GRAVEL ; GW-SW; fine to coarse-grained; saturated; hydrocarbon odor; black staining; saturated with sheen and product					120	
15			NO RECOVERY						15
		GW-SW	SANDY GRAVEL ; GW-SW; fine to coarse-grained; saturated; hydrocarbon odor; black staining; saturated with sheen and product						
		GW-SW	SANDY GRAVEL ; GW-SW; fine to coarse-grained; saturated; hydrocarbon odor; black staining; saturated with sheen and product					147	



PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 2 OF 2 SB02	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/16/17	COMPLETED: 5/17/17	NORTHING (ft): 1,294,718.13	EASTING (ft): 2,073,666.36
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,197.84	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 6.5	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): ---	WELL DEPTH (ft):
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL


Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
20		GW-SW	Borehole terminated at 20 feet.					61.8	20
25									
30									
35									










PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 1 OF 2 SB03	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/17/17	COMPLETED: 5/17/17	NORTHING (ft): 1,294,733.80	EASTING (ft): 2,073,646.12
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,200.35	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 7	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): ---	WELL DEPTH (ft):
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL


Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
		GW-SW	SANDY GRAVEL WITH CLAY ; GW-SW; light brown; fine to coarse-grained; slightly moist; well graded; Hand Auger						
		SW-SC	SANDY/CLAYEY ; SW-SC; light brown; fine to medium-grained; medium plasticity; moist; no hydrocarbon odor; Hand Auger					2.2	
5		SW-SC	SANDY/CLAYEY ; SW-SC; light brown; fine to medium-grained; medium plasticity; moist; no hydrocarbon odor					0.6	5
		MLS	SAND ; MLS; fine-grained; slightly moist; hydrocarbon odor; black staining						
10		GP GW-SW	SANDY GRAVEL ; GP; dark gray; fine to coarse-grained; saturated; hydrocarbon odor; black staining SANDY GRAVEL ; GW-SW; fine to medium-grained; moist; hydrocarbon odor; black staining		SB03 1405			467	10
		GW-SW	SANDY GRAVEL ; GW-SW; dark gray; fine to coarse-grained; saturated; hydrocarbon odor; black staining; product and sheen on water					554	
15		GW-SW	SANDY GRAVEL ; GW-SW; dark gray; fine to coarse-grained; saturated; hydrocarbon odor; some staining; product and sheen on water					468	15


PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 2 OF 2 SB03	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/17/17	COMPLETED: 5/17/17	NORTHING (ft): 1,294,733.80	EASTING (ft): 2,073,646.12
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,200.35	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 7	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): ---	WELL DEPTH (ft):
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL


Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
20		GW-SW	Borehole terminated at 20 feet.					24.2	20







PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 1 OF 2 SB04	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/17/17	COMPLETED: 5/17/17	NORTHING (ft): 1,294,704.67	EASTING (ft): 2,073,646.82
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,199.37	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 7	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): ---	WELL DEPTH (ft):
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL


Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
		GW-SW	SANDY GRAVEL WITH CLAY ; GW-SW; light brown; fine to coarse-grained; slightly moist; no hydrocarbon odor; Hand Auger						
		SC	SANDY/CLAYEY ; SC; light brown; medium plasticity; moist; Hand Auger					0.9	
		SC	SANDY/CLAYEY ; SC; light brown; medium plasticity; moist; hydrocarbon odor; black staining; Hand Auger		SB04 0910			85.4	5
5			NO RECOVERY						
		SC	SANDY/CLAYEY ; SC; light brown; medium plasticity; saturated; hydrocarbon odor; black staining					125	
		MLS	SAND ; MLS; light brown; fine-grained; saturated; hydrocarbon odor					125	10
10			NO RECOVERY						
		SC	SANDY/CLAYEY ; SC; light brown; medium plasticity; moist; black staining					105	
		GW-SW	SANDY GRAVEL ; GW-SW; gray; fine to medium-grained; saturated; hydrocarbon odor					5.4	
		GW-SW	SANDY GRAVEL ; GW-SW; dark gray; fine to coarse-grained; saturated; hydrocarbon odor; no staining					5.4	15
15			NO RECOVERY						
		GW-SW	SANDY GRAVEL ; GW-SW; dark gray; fine to coarse-grained; saturated; hydrocarbon odor; no staining					2.3	

PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 2 OF 2 SB04	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/17/17	COMPLETED: 5/17/17	NORTHING (ft): 1,294,704.67	EASTING (ft): 2,073,646.82
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,199.37	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 7	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): ---	WELL DEPTH (ft):
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL


Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
20		GW-SW	Borehole terminated at 20 feet.						20
25									
30									
35									



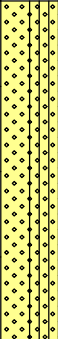
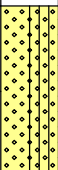


PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 1 OF 2 SB05	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/18/17	COMPLETED: 5/18/17	NORTHING (ft): 1,294,718.34	EASTING (ft): 2,073,681.04
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,197.58	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 7	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): ---	WELL DEPTH (ft):
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL


Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
		GW-SW	SANDY GRAVEL WITH FINES ; GW-SW; light brown; slightly moist; Hand Auger						
		SC	CLAYEY SAND ; SC; dark brown; medium plasticity; moist; hydrocarbon odor; black staining; Hand Auger		SB05 0923			48	
5			NO RECOVERY						5
		SC	CLAYEY SAND ; SC; dark brown; medium plasticity; saturated; hydrocarbon odor; black staining		SB05 1000			2912	
10			NO RECOVERY						10
		SC	CLAYEY SAND ; SC; medium plasticity; saturated; hydrocarbon odor; black staining		SB05 1015			580	
15		GW-SW	SANDY GRAVEL ; GW-SW; fine to medium-grained; saturated; hydrocarbon odor; black staining					145	15
		GW-SW	SANDY GRAVEL ; GW-SW; dark gray; fine to coarse-grained; black staining					780	



PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 2 OF 2 SB05	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/18/17	COMPLETED: 5/18/17	NORTHING (ft): 1,294,718.34	EASTING (ft): 2,073,681.04
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,197.58	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 7	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): ---	WELL DEPTH (ft):
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
		SM	SAND ; SM; dark gray; fine-grained; saturated; hydrocarbon odor		SB05 1040			22	
20			Borehole terminated at 20 feet.						20
25									
30									
35									

PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 1 OF 2 SB06	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/18/17	COMPLETED: 5/18/17	NORTHING (ft): 1,294,735.07	EASTING (ft): 2,073,665.51
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,197.67	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 7	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): Not Encountered	WELL DEPTH (ft):
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
		GW-SW	SANDY GRAVEL WITH FINES ; GW-SW; light brown; slightly moist; no hydrocarbon odor; Hand Auger						
		SW-SC	SANDY CLAY ; SW-SC; dark brown; medium plasticity; moist; black staining; Hand Auger						
5			NO RECOVERY		SB06 1110			1009	5
		SW-SM	SAND ; SW-SM; fine-grained; moist; hydrocarbon odor; black staining					1394	
10			NO RECOVERY						10
		SW-SM	SAND ; SW-SM; fine to medium-grained; saturated; hydrocarbon odor; black staining					1267	
15		SW-GW	SANDY GRAVEL ; SW-GW; fine to coarse-grained; product and sheen on water					437	15
		SW-GW	SANDY GRAVEL ; SW-GW; fine to coarse-grained; no odor; no sheen						

PROJECT: CS-47		WELL / PROBEHOLE / BOREHOLE NO:	
LOCATION: Rangely, CO		PAGE 2 OF 2 SB06	
PROJECT NUMBER: 203706066			
DRILLING: STARTED 5/18/17	COMPLETED: 5/18/17	NORTHING (ft): 1,294,735.07	EASTING (ft): 2,073,665.51
INSTALLATION: STARTED	COMPLETED:	GROUND ELEV (ft): 5,197.67	TOC ELEV (ft):
DRILLING COMPANY: Cascade		INITIAL DTW (ft): 7	BOREHOLE DEPTH (ft): 20
DRILLING EQUIPMENT: Geoprobe 7730 DT		STATIC DTW (ft): Not Encountered	
DRILLING METHOD: Airknife/HSA/DP		WELL CASING DIA. (in): ---	BOREHOLE DIA.(in): 2.25
SAMPLING EQUIPMENT: Acetate liner/HA		LOGGED BY: MHS	CHECKED BY: BAL

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
20		SW-GW						35	20
			Borehole terminated at 20 feet.						
25									
30									
35									

APPENDIX C

ANALYTICAL LABORATORY REPORTS



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
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June 02, 2017

Christopher Beall
Stantec
2000 South Colorado Boulevard Suite 2-300

Denver, CO 80222

Work Order: **HS17051011**

Laboratory Results for: **Chevron Rangleley CS47**

Dear Christopher,

ALS Environmental received 7 sample(s) on May 18, 2017 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: Dayna.Fisher
Dane J. Wacasey

Client: Stantec
Project: Chevron Ranglely CS47
Work Order: HS17051011

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS17051011-01	SB01 (3.5-4.5)	Soil		15-May-2017 16:22	18-May-2017 08:45	<input type="checkbox"/>
HS17051011-02	SB01 (6-9)	Soil		15-May-2017 17:15	18-May-2017 08:45	<input type="checkbox"/>
HS17051011-03	MW5 (7-9)	Soil		16-May-2017 10:10	18-May-2017 08:45	<input type="checkbox"/>
HS17051011-04	MW4 (8-10)	Soil		16-May-2017 14:02	18-May-2017 08:45	<input type="checkbox"/>
HS17051011-05	SB04 (4-5)	Soil		17-May-2017 09:10	18-May-2017 08:45	<input type="checkbox"/>
HS17051011-06	SB02 (4-4.5)	Soil		16-May-2017 17:15	18-May-2017 08:45	<input type="checkbox"/>
HS17051011-07	Trip Blank	Water	050117-11	15-May-2017 00:00	18-May-2017 08:45	<input checked="" type="checkbox"/>

Client: Stantec
Project: Chevron Ranglely CS47
Work Order: HS17051011

CASE NARRATIVE

Work Order Comments

- Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.
The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

GC Semivolatiles by Method SW8015M**Batch ID: 116371****Sample ID: SB01 (3.5-4.5) (HS17051011-01)**

- Due to sample matrix interferences, the surrogate recovery was outside of the established control limits.

Sample ID: SB04 (4-5) (HS17051011-05)

- Due to sample matrix interferences, the surrogate recovery was outside of the established control limits.

Sample ID: SB01 (6-9) (HS17051011-02)

- The surrogate recoveries could not be determined due to dilution below the calibration range.

GC Volatiles by Method SW8015**Batch ID: R295209****Sample ID: SB01 (3.5-4.5) (HS17051011-01)**

- Surrogate recoveries were outside of the control limits due to matrix interference.

GCMS Semivolatiles by Method SW8270**Batch ID: 116445**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Sample ID: SB02 (4-4.5) (HS17051011-06)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: SB04 (4-5) (HS17051011-05)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Batch ID: 116401**Sample ID: HS17050702-01**

- MS and MSD are for an unrelated sample

Sample ID: SB01 (3.5-4.5) (HS17051011-01)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: SB01 (6-9) (HS17051011-02)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: SB01 (3.5-4.5) (HS17051011-01)

- One or more surrogate recoveries were above the upper control limits.

Client: Stantec
Project: Chevron Ranglely CS47
Work Order: HS17051011

CASE NARRATIVE

GCMS Semivolatiles by Method SW8270

GCMS Volatiles by Method SW8260**Batch ID: R295078**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method La29B SAR**Batch ID: R295643**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method LADNR Ba**Batch ID: 116712**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method Calculation**Batch ID: R295527**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method La29B-6020**Batch ID: 116767**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020**Batch ID: 116428**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW7471A**Batch ID: 116423**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method ASTM D2216**Batch ID: R295129**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method LaDNR-29B EC**Batch ID: R295544**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9045B**Batch ID: R295081**

Client: Stantec
Project: Chevron Ranglely CS47
Work Order: HS17051011

CASE NARRATIVE

WetChemistry by Method SW9045B

Batch ID: R295081

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW7196

Batch ID: 116607

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB01 (3.5-4.5)
 Collection Date: 15-May-2017 16:22

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
Benzene	< 0.00070		0.00070	0.0070	mg/Kg-dry	1	22-May-2017 21:13
Ethylbenzene	< 0.00098		0.00098	0.0070	mg/Kg-dry	1	22-May-2017 21:13
Toluene	< 0.00084		0.00084	0.0070	mg/Kg-dry	1	22-May-2017 21:13
Xylenes, Total	< 0.0014		0.0014	0.0070	mg/Kg-dry	1	22-May-2017 21:13
Surr: 1,2-Dichloroethane-d4	109			70-128	%REC	1	22-May-2017 21:13
Surr: 4-Bromofluorobenzene	99.5			73-126	%REC	1	22-May-2017 21:13
Surr: Dibromofluoromethane	109			71-128	%REC	1	22-May-2017 21:13
Surr: Toluene-d8	109			73-127	%REC	1	22-May-2017 21:13
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: SFE			
Gasoline Range Organics	46		0.013	0.064	mg/Kg-dry	1	23-May-2017 13:18
Surr: 4-Bromofluorobenzene	255	S		70-130	%REC	1	23-May-2017 13:18
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 19-May-2017		Analyst: GEY	
Acenaphthene	< 0.027		0.027	0.18	mg/Kg-dry	10	23-May-2017 20:56
Anthracene	< 0.027		0.027	0.18	mg/Kg-dry	10	23-May-2017 20:56
Benz(a)anthracene	< 0.088		0.088	0.18	mg/Kg-dry	10	23-May-2017 20:56
Benzo(a)pyrene	1.3		0.055	0.18	mg/Kg-dry	10	23-May-2017 20:56
Benzo(b)fluoranthene	< 0.066		0.066	0.18	mg/Kg-dry	10	23-May-2017 20:56
Benzo(k)fluoranthene	< 0.049		0.049	0.18	mg/Kg-dry	10	23-May-2017 20:56
Chrysene	2.7		0.044	0.18	mg/Kg-dry	10	23-May-2017 20:56
Dibenz(a,h)anthracene	< 0.088		0.088	0.18	mg/Kg-dry	10	23-May-2017 20:56
Fluoranthene	< 0.060		0.060	0.18	mg/Kg-dry	10	23-May-2017 20:56
Fluorene	< 0.060		0.060	0.18	mg/Kg-dry	10	23-May-2017 20:56
Indeno(1,2,3-cd)pyrene	< 0.044		0.044	0.18	mg/Kg-dry	10	23-May-2017 20:56
Naphthalene	0.080	J	0.033	0.18	mg/Kg-dry	10	23-May-2017 20:56
Pyrene	< 0.033		0.033	0.18	mg/Kg-dry	10	23-May-2017 20:56
Surr: 2-Fluorobiphenyl	93.5			43-125	%REC	10	23-May-2017 20:56
Surr: 4-Terphenyl-d14	127	S		32-125	%REC	10	23-May-2017 20:56
Surr: Nitrobenzene-d5	94.5			37-125	%REC	10	23-May-2017 20:56
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3541 / 23-May-2017		Analyst: AAP	
TPH (Diesel Range)	19,000		550	1900	mg/Kg-dry	200	26-May-2017 02:13
TPH (Motor Oil Range)	50,000		550	3700	mg/Kg-dry	200	26-May-2017 02:13
Surr: 2-Fluorobiphenyl	1180	JS		60-135	%REC	200	26-May-2017 02:13
TRIVALENT CHROMIUM		Method:Calculation		Analyst: DQ			
Chromium, Trivalent	28.1		0.856	6.11	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO		Method:La29B SAR		Analyst: RPM			
Sodium Adsorption Ratio	11.6		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB01 (3.5-4.5)
 Collection Date: 15-May-2017 16:22

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	658		5.00	5.00	mg/L	10	30-May-2017 14:05
Magnesium	374		5.00	5.00	mg/L	10	30-May-2017 14:05
Sodium	1,510		5.00	5.00	mg/L	10	30-May-2017 14:05
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	167		25.0	25.0	mg/Kg	1	01-Jun-2017 11:08
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 22-May-2017		Analyst: JDE	
Arsenic	8.16		0.117	0.587	mg/Kg-dry	1	22-May-2017 20:17
Boron	12.9		1.64	2.94	mg/Kg-dry	1	22-May-2017 20:17
Cadmium	0.448	J	0.0587	0.587	mg/Kg-dry	1	22-May-2017 20:17
Chromium	28.1		0.106	0.587	mg/Kg-dry	1	22-May-2017 20:17
Copper	22.8		0.117	0.235	mg/Kg-dry	1	22-May-2017 20:17
Lead	148		0.0587	0.587	mg/Kg-dry	1	22-May-2017 20:17
Nickel	45.8		0.106	0.587	mg/Kg-dry	1	22-May-2017 20:17
Selenium	1.05		0.211	0.587	mg/Kg-dry	1	22-May-2017 20:17
Silver	0.0978	J	0.0939	0.587	mg/Kg-dry	1	22-May-2017 20:17
Zinc	131		0.294	0.587	mg/Kg-dry	1	22-May-2017 20:17
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 22-May-2017		Analyst: JC	
Mercury	0.337		0.000600	0.00425	mg/Kg-dry	1	22-May-2017 14:49
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: DFF	
Percent Moisture	18.2		0.0100	0.0100	wt%	1	19-May-2017 12:12
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	14.9		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.359		0.359	2.39	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	7.57	H	0.100	0.100	pH Units	1	22-May-2017 12:25
Temp Deg C @pH	21.9	H	0	0	°C	1	22-May-2017 12:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB01 (6-9)
 Collection Date: 15-May-2017 17:15

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
Benzene	< 0.00062		0.00062	0.0062	mg/Kg-dry	1	22-May-2017 18:58
Ethylbenzene	< 0.00087		0.00087	0.0062	mg/Kg-dry	1	22-May-2017 18:58
Toluene	< 0.00075		0.00075	0.0062	mg/Kg-dry	1	22-May-2017 18:58
Xylenes, Total	< 0.0012		0.0012	0.0062	mg/Kg-dry	1	22-May-2017 18:58
Surr: 1,2-Dichloroethane-d4	94.3			70-128	%REC	1	22-May-2017 18:58
Surr: 4-Bromofluorobenzene	96.2			73-126	%REC	1	22-May-2017 18:58
Surr: Dibromofluoromethane	94.3			71-128	%REC	1	22-May-2017 18:58
Surr: Toluene-d8	103			73-127	%REC	1	22-May-2017 18:58
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: SFE			
Gasoline Range Organics	0.064		0.013	0.064	mg/Kg-dry	1	23-May-2017 13:34
Surr: 4-Bromofluorobenzene	83.1			70-130	%REC	1	23-May-2017 13:34
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 19-May-2017		Analyst: GEY	
Acenaphthene	< 0.0054		0.0054	0.035	mg/Kg-dry	10	24-May-2017 12:52
Anthracene	< 0.0054		0.0054	0.035	mg/Kg-dry	10	24-May-2017 12:52
Benz(a)anthracene	< 0.017		0.017	0.035	mg/Kg-dry	10	24-May-2017 12:52
Benzo(a)pyrene	0.10		0.011	0.035	mg/Kg-dry	10	24-May-2017 12:52
Benzo(b)fluoranthene	< 0.013		0.013	0.035	mg/Kg-dry	10	24-May-2017 12:52
Benzo(k)fluoranthene	< 0.0096		0.0096	0.035	mg/Kg-dry	10	24-May-2017 12:52
Chrysene	0.30		0.0086	0.035	mg/Kg-dry	10	24-May-2017 12:52
Dibenz(a,h)anthracene	< 0.017		0.017	0.035	mg/Kg-dry	10	24-May-2017 12:52
Fluoranthene	0.055		0.012	0.035	mg/Kg-dry	10	24-May-2017 12:52
Fluorene	< 0.012		0.012	0.035	mg/Kg-dry	10	24-May-2017 12:52
Indeno(1,2,3-cd)pyrene	< 0.0086		0.0086	0.035	mg/Kg-dry	10	24-May-2017 12:52
Naphthalene	< 0.0064		0.0064	0.035	mg/Kg-dry	10	24-May-2017 12:52
Pyrene	0.035	J	0.0064	0.035	mg/Kg-dry	10	24-May-2017 12:52
Surr: 2-Fluorobiphenyl	74.1			43-125	%REC	10	24-May-2017 12:52
Surr: 4-Terphenyl-d14	70.5			32-125	%REC	10	24-May-2017 12:52
Surr: Nitrobenzene-d5	58.0			37-125	%REC	10	24-May-2017 12:52
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3541 / 23-May-2017		Analyst: AAP	
TPH (Diesel Range)	1,300		27	91	mg/Kg-dry	50	26-May-2017 11:32
TPH (Motor Oil Range)	3,100		27	180	mg/Kg-dry	50	26-May-2017 11:32
Surr: 2-Fluorobiphenyl	0	JS		60-135	%REC	50	26-May-2017 11:32
TRIVALENT CHROMIUM		Method:Calculation		Analyst: DQ			
Chromium, Trivalent	4.70	J	0.751	5.37	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO		Method:La29B SAR		Analyst: RPM			
Sodium Adsorption Ratio	5.89		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB01 (6-9)
 Collection Date: 15-May-2017 17:15

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	631		5.00	5.00	mg/L	10	30-May-2017 14:08
Magnesium	37.1		5.00	5.00	mg/L	10	30-May-2017 14:08
Sodium	563		5.00	5.00	mg/L	10	30-May-2017 14:08
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	27.9		25.0	25.0	mg/Kg	1	01-Jun-2017 11:11
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 22-May-2017		Analyst: JDE	
Arsenic	2.33		0.100	0.501	mg/Kg-dry	1	22-May-2017 20:21
Boron	4.34		1.40	2.51	mg/Kg-dry	1	22-May-2017 20:21
Cadmium	0.108	J	0.0501	0.501	mg/Kg-dry	1	22-May-2017 20:21
Chromium	4.70		0.0902	0.501	mg/Kg-dry	1	22-May-2017 20:21
Copper	5.44		0.100	0.201	mg/Kg-dry	1	22-May-2017 20:21
Lead	6.20		0.0501	0.501	mg/Kg-dry	1	22-May-2017 20:21
Nickel	6.11		0.0902	0.501	mg/Kg-dry	1	22-May-2017 20:21
Selenium	0.703		0.180	0.501	mg/Kg-dry	1	22-May-2017 20:21
Silver	< 0.0802		0.0802	0.501	mg/Kg-dry	1	22-May-2017 20:21
Zinc	27.8		0.251	0.501	mg/Kg-dry	1	22-May-2017 20:21
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 22-May-2017		Analyst: JC	
Mercury	0.00563		0.000515	0.00365	mg/Kg-dry	1	22-May-2017 14:51
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: DFF	
Percent Moisture	6.85		0.0100	0.0100	wt%	1	19-May-2017 12:12
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	5.29		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.320		0.320	2.13	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	8.67	H	0.100	0.100	pH Units	1	22-May-2017 12:25
Temp Deg C @pH	21.9	H	0	0	°C	1	22-May-2017 12:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: MW5 (7-9)
 Collection Date: 16-May-2017 10:10

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
Benzene	< 0.00076		0.00076	0.0076	mg/Kg-dry	1	22-May-2017 19:25
Ethylbenzene	< 0.0011		0.0011	0.0076	mg/Kg-dry	1	22-May-2017 19:25
Toluene	< 0.00091		0.00091	0.0076	mg/Kg-dry	1	22-May-2017 19:25
Xylenes, Total	< 0.0015		0.0015	0.0076	mg/Kg-dry	1	22-May-2017 19:25
Surr: 1,2-Dichloroethane-d4	97.2			70-128	%REC	1	22-May-2017 19:25
Surr: 4-Bromofluorobenzene	96.5			73-126	%REC	1	22-May-2017 19:25
Surr: Dibromofluoromethane	94.2			71-128	%REC	1	22-May-2017 19:25
Surr: Toluene-d8	101			73-127	%REC	1	22-May-2017 19:25
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: SFE			
Gasoline Range Organics	0.19		0.015	0.075	mg/Kg-dry	1	23-May-2017 13:50
Surr: 4-Bromofluorobenzene	88.8			70-130	%REC	1	23-May-2017 13:50
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 19-May-2017		Analyst: GEY	
Acenaphthene	< 0.00067		0.00067	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Anthracene	< 0.00067		0.00067	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Benz(a)anthracene	< 0.0021		0.0021	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Benzo(a)pyrene	< 0.0013		0.0013	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Benzo(b)fluoranthene	0.0017	J	0.0016	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Benzo(k)fluoranthene	0.0018	J	0.0012	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Chrysene	< 0.0011		0.0011	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Dibenz(a,h)anthracene	< 0.0021		0.0021	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Fluoranthene	0.0032	J	0.0015	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Fluorene	< 0.0015		0.0015	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Indeno(1,2,3-cd)pyrene	< 0.0011		0.0011	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Naphthalene	0.0025	J	0.00080	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Pyrene	0.0032	J	0.00080	0.0044	mg/Kg-dry	1	23-May-2017 20:17
Surr: 2-Fluorobiphenyl	68.9			43-125	%REC	1	23-May-2017 20:17
Surr: 4-Terphenyl-d14	108			32-125	%REC	1	23-May-2017 20:17
Surr: Nitrobenzene-d5	66.7			37-125	%REC	1	23-May-2017 20:17
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3541 / 23-May-2017		Analyst: AAP	
TPH (Diesel Range)	1.6	J	0.67	2.3	mg/Kg-dry	1	25-May-2017 16:52
TPH (Motor Oil Range)	6.3		0.67	4.5	mg/Kg-dry	1	25-May-2017 16:52
Surr: 2-Fluorobiphenyl	69.5			60-135	%REC	1	25-May-2017 16:52
TRIVALENT CHROMIUM		Method:Calculation		Analyst: DQ			
Chromium, Trivalent	5.97	J	0.935	6.68	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO		Method:La29B SAR		Analyst: RPM			
Sodium Adsorption Ratio	17.8		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: MW5 (7-9)
 Collection Date: 16-May-2017 10:10

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	297		5.00	5.00	mg/L	10	30-May-2017 14:11
Magnesium	64.9		5.00	5.00	mg/L	10	30-May-2017 14:11
Sodium	1,300		5.00	5.00	mg/L	10	30-May-2017 14:11
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	112		25.0	25.0	mg/Kg	1	01-Jun-2017 11:32
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 22-May-2017		Analyst: JDE	
Arsenic	3.75		0.124	0.620	mg/Kg-dry	1	22-May-2017 20:52
Boron	6.76		1.74	3.10	mg/Kg-dry	1	22-May-2017 20:52
Cadmium	0.179	J	0.0620	0.620	mg/Kg-dry	1	22-May-2017 20:52
Chromium	5.97		0.112	0.620	mg/Kg-dry	1	22-May-2017 20:52
Copper	7.07		0.124	0.248	mg/Kg-dry	1	22-May-2017 20:52
Lead	6.71		0.0620	0.620	mg/Kg-dry	1	22-May-2017 20:52
Nickel	7.97		0.112	0.620	mg/Kg-dry	1	22-May-2017 20:52
Selenium	0.750		0.223	0.620	mg/Kg-dry	1	22-May-2017 20:52
Silver	< 0.0992		0.0992	0.620	mg/Kg-dry	1	22-May-2017 20:52
Zinc	31.7		0.310	0.620	mg/Kg-dry	1	22-May-2017 20:52
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 22-May-2017		Analyst: JC	
Mercury	0.00855		0.000662	0.00468	mg/Kg-dry	1	22-May-2017 14:52
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: DFF	
Percent Moisture	25.1		0.0100	0.0100	wt%	1	19-May-2017 12:12
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	11.4		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.395		0.395	2.63	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	8.11	H	0.100	0.100	pH Units	1	22-May-2017 12:25
Temp Deg C @pH	21.8	H	0	0	°C	1	22-May-2017 12:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: MW4 (8-10)
 Collection Date: 16-May-2017 14:02

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
Benzene	0.0021	J	0.00059	0.0059	mg/Kg-dry	1	22-May-2017 19:52
Ethylbenzene	< 0.00083		0.00083	0.0059	mg/Kg-dry	1	22-May-2017 19:52
Toluene	< 0.00071		0.00071	0.0059	mg/Kg-dry	1	22-May-2017 19:52
Xylenes, Total	< 0.0012		0.0012	0.0059	mg/Kg-dry	1	22-May-2017 19:52
Surr: 1,2-Dichloroethane-d4	106			70-128	%REC	1	22-May-2017 19:52
Surr: 4-Bromofluorobenzene	95.6			73-126	%REC	1	22-May-2017 19:52
Surr: Dibromofluoromethane	104			71-128	%REC	1	22-May-2017 19:52
Surr: Toluene-d8	101			73-127	%REC	1	22-May-2017 19:52
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: SFE			
Gasoline Range Organics	0.21		0.010	0.051	mg/Kg-dry	1	23-May-2017 14:06
Surr: 4-Bromofluorobenzene	89.8			70-130	%REC	1	23-May-2017 14:06
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 22-May-2017		Analyst: GEY	
Acenaphthene	< 0.00054		0.00054	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Anthracene	0.0050		0.00054	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Benz(a)anthracene	0.0022	J	0.0017	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Benzo(a)pyrene	< 0.0011		0.0011	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Benzo(b)fluoranthene	< 0.0013		0.0013	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Benzo(k)fluoranthene	< 0.00097		0.00097	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Chrysene	0.0044		0.00086	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Dibenz(a,h)anthracene	< 0.0017		0.0017	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Fluoranthene	0.0077		0.0012	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Fluorene	< 0.0012		0.0012	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Indeno(1,2,3-cd)pyrene	< 0.00086		0.00086	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Naphthalene	< 0.00065		0.00065	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Pyrene	0.0064		0.00065	0.0036	mg/Kg-dry	1	23-May-2017 23:09
Surr: 2-Fluorobiphenyl	89.5			43-125	%REC	1	23-May-2017 23:09
Surr: 4-Terphenyl-d14	80.4			32-125	%REC	1	23-May-2017 23:09
Surr: Nitrobenzene-d5	71.1			37-125	%REC	1	23-May-2017 23:09
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3541 / 23-May-2017		Analyst: AAP	
TPH (Diesel Range)	1.5	J	0.54	1.8	mg/Kg-dry	1	25-May-2017 17:16
TPH (Motor Oil Range)	5.1		0.54	3.7	mg/Kg-dry	1	25-May-2017 17:16
Surr: 2-Fluorobiphenyl	79.9			60-135	%REC	1	25-May-2017 17:16
TRIVALENT CHROMIUM		Method:Calculation		Analyst: DQ			
Chromium, Trivalent	6.32		0.756	5.40	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO		Method:La29B SAR		Analyst: RPM			
Sodium Adsorption Ratio	30.0		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: MW4 (8-10)
 Collection Date: 16-May-2017 14:02

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	183		5.00	5.00	mg/L	10	30-May-2017 14:14
Magnesium	44.0		5.00	5.00	mg/L	10	30-May-2017 14:14
Sodium	1,740		9.99	9.99	mg/L	20	30-May-2017 16:50
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	147		25.0	25.0	mg/Kg	1	01-Jun-2017 11:35
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 22-May-2017		Analyst: JDE	
Arsenic	5.53		0.102	0.511	mg/Kg-dry	1	22-May-2017 20:56
Boron	3.97		1.43	2.55	mg/Kg-dry	1	22-May-2017 20:56
Cadmium	0.213	J	0.0511	0.511	mg/Kg-dry	1	22-May-2017 20:56
Chromium	6.32		0.0920	0.511	mg/Kg-dry	1	22-May-2017 20:56
Copper	4.86		0.102	0.204	mg/Kg-dry	1	22-May-2017 20:56
Lead	6.19		0.0511	0.511	mg/Kg-dry	1	22-May-2017 20:56
Nickel	7.56		0.0920	0.511	mg/Kg-dry	1	22-May-2017 20:56
Selenium	0.765		0.184	0.511	mg/Kg-dry	1	22-May-2017 20:56
Silver	< 0.0817		0.0817	0.511	mg/Kg-dry	1	22-May-2017 20:56
Zinc	27.9		0.255	0.511	mg/Kg-dry	1	22-May-2017 20:56
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 22-May-2017		Analyst: JC	
Mercury	0.0105		0.000517	0.00366	mg/Kg-dry	1	22-May-2017 14:54
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: DFF	
Percent Moisture	7.37		0.0100	0.0100	wt%	1	19-May-2017 12:12
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	11.4		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.321		0.321	2.14	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	8.42	H	0.100	0.100	pH Units	1	22-May-2017 12:25
Temp Deg C @pH	21.7	H	0	0	°C	1	22-May-2017 12:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB04 (4-5)
 Collection Date: 17-May-2017 09:10

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
Benzene	< 0.00061		0.00061	0.0061	mg/Kg-dry	1	22-May-2017 20:46
Ethylbenzene	< 0.00085		0.00085	0.0061	mg/Kg-dry	1	22-May-2017 20:46
Toluene	< 0.00073		0.00073	0.0061	mg/Kg-dry	1	22-May-2017 20:46
Xylenes, Total	< 0.0012		0.0012	0.0061	mg/Kg-dry	1	22-May-2017 20:46
Surr: 1,2-Dichloroethane-d4	96.4			70-128	%REC	1	22-May-2017 20:46
Surr: 4-Bromofluorobenzene	96.1			73-126	%REC	1	22-May-2017 20:46
Surr: Dibromofluoromethane	93.0			71-128	%REC	1	22-May-2017 20:46
Surr: Toluene-d8	106			73-127	%REC	1	22-May-2017 20:46
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: SFE			
Gasoline Range Organics	16		0.014	0.071	mg/Kg-dry	1	23-May-2017 14:22
Surr: 4-Bromofluorobenzene	123			70-130	%REC	1	23-May-2017 14:22
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 22-May-2017		Analyst: GEY	
Acenaphthene	< 0.0063		0.0063	0.042	mg/Kg-dry	10	24-May-2017 00:09
Anthracene	< 0.0063		0.0063	0.042	mg/Kg-dry	10	24-May-2017 00:09
Benz(a)anthracene	< 0.020		0.020	0.042	mg/Kg-dry	10	24-May-2017 00:09
Benzo(a)pyrene	< 0.013		0.013	0.042	mg/Kg-dry	10	24-May-2017 00:09
Benzo(b)fluoranthene	< 0.015		0.015	0.042	mg/Kg-dry	10	24-May-2017 00:09
Benzo(k)fluoranthene	< 0.011		0.011	0.042	mg/Kg-dry	10	24-May-2017 00:09
Chrysene	0.17		0.010	0.042	mg/Kg-dry	10	24-May-2017 00:09
Dibenz(a,h)anthracene	< 0.020		0.020	0.042	mg/Kg-dry	10	24-May-2017 00:09
Fluoranthene	< 0.014		0.014	0.042	mg/Kg-dry	10	24-May-2017 00:09
Fluorene	< 0.014		0.014	0.042	mg/Kg-dry	10	24-May-2017 00:09
Indeno(1,2,3-cd)pyrene	< 0.010		0.010	0.042	mg/Kg-dry	10	24-May-2017 00:09
Naphthalene	< 0.0076		0.0076	0.042	mg/Kg-dry	10	24-May-2017 00:09
Pyrene	< 0.0076		0.0076	0.042	mg/Kg-dry	10	24-May-2017 00:09
Surr: 2-Fluorobiphenyl	70.1			43-125	%REC	10	24-May-2017 00:09
Surr: 4-Terphenyl-d14	78.0			32-125	%REC	10	24-May-2017 00:09
Surr: Nitrobenzene-d5	65.2			37-125	%REC	10	24-May-2017 00:09
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3541 / 23-May-2017		Analyst: AAP	
TPH (Diesel Range)	1,600		31	110	mg/Kg-dry	50	26-May-2017 03:26
TPH (Motor Oil Range)	3,400		31	210	mg/Kg-dry	50	26-May-2017 03:26
Surr: 2-Fluorobiphenyl	168	S		60-135	%REC	50	26-May-2017 03:26
TRIVALENT CHROMIUM		Method:Calculation		Analyst: DQ			
Chromium, Trivalent	14.1		0.884	6.31	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO		Method:La29B SAR		Analyst: RPM			
Sodium Adsorption Ratio	4.93		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB04 (4-5)
 Collection Date: 17-May-2017 09:10

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	575		5.00	5.00	mg/L	10	30-May-2017 16:53
Magnesium	231		5.00	5.00	mg/L	10	30-May-2017 16:53
Sodium	553		5.00	5.00	mg/L	10	30-May-2017 16:53
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	149		25.0	25.0	mg/Kg	1	01-Jun-2017 11:38
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 22-May-2017		Analyst: JDE	
Arsenic	5.35		0.120	0.602	mg/Kg-dry	1	22-May-2017 21:01
Boron	16.0		1.69	3.01	mg/Kg-dry	1	22-May-2017 21:01
Cadmium	0.201	J	0.0602	0.602	mg/Kg-dry	1	22-May-2017 21:01
Chromium	14.1		0.108	0.602	mg/Kg-dry	1	22-May-2017 21:01
Copper	10.5		0.120	0.241	mg/Kg-dry	1	22-May-2017 21:01
Lead	11.1		0.0602	0.602	mg/Kg-dry	1	22-May-2017 21:01
Nickel	13.8		0.108	0.602	mg/Kg-dry	1	22-May-2017 21:01
Selenium	1.32		0.217	0.602	mg/Kg-dry	1	22-May-2017 21:01
Silver	< 0.0964		0.0964	0.602	mg/Kg-dry	1	22-May-2017 21:01
Zinc	47.5		0.301	0.602	mg/Kg-dry	1	22-May-2017 21:01
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 22-May-2017		Analyst: JC	
Mercury	0.0151		0.000639	0.00452	mg/Kg-dry	1	22-May-2017 14:56
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: DFF	
Percent Moisture	20.8		0.0100	0.0100	wt%	1	19-May-2017 12:12
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	6.13		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.379		0.379	2.53	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	8.41	H	0.100	0.100	pH Units	1	22-May-2017 12:25
Temp Deg C @pH	21.4	H	0	0	°C	1	22-May-2017 12:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB02 (4-4.5)
 Collection Date: 16-May-2017 17:15

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C			Method:SW8260			Analyst: WLR	
Benzene	0.0013	J	0.00053	0.0053	mg/Kg-dry	1	22-May-2017 20:19
Ethylbenzene	< 0.00074		0.00074	0.0053	mg/Kg-dry	1	22-May-2017 20:19
Toluene	< 0.00064		0.00064	0.0053	mg/Kg-dry	1	22-May-2017 20:19
Xylenes, Total	< 0.0011		0.0011	0.0053	mg/Kg-dry	1	22-May-2017 20:19
Surr: 1,2-Dichloroethane-d4	102			70-128	%REC	1	22-May-2017 20:19
Surr: 4-Bromofluorobenzene	102			73-126	%REC	1	22-May-2017 20:19
Surr: Dibromofluoromethane	97.9			71-128	%REC	1	22-May-2017 20:19
Surr: Toluene-d8	100			73-127	%REC	1	22-May-2017 20:19
GASOLINE RANGE ORGANICS BY SW8015C			Method:SW8015			Analyst: SFE	
Gasoline Range Organics	1.3		0.011	0.054	mg/Kg-dry	1	23-May-2017 14:38
Surr: 4-Bromofluorobenzene	89.2			70-130	%REC	1	23-May-2017 14:38
LOW-LEVEL SEMIVOLATILES BY 8270D			Method:SW8270			Prep:SW3541 / 22-May-2017 Analyst: GEY	
Acenaphthene	< 0.0062		0.0062	0.041	mg/Kg-dry	10	23-May-2017 23:49
Anthracene	0.011	J	0.0062	0.041	mg/Kg-dry	10	23-May-2017 23:49
Benz(a)anthracene	< 0.020		0.020	0.041	mg/Kg-dry	10	23-May-2017 23:49
Benzo(a)pyrene	< 0.012		0.012	0.041	mg/Kg-dry	10	23-May-2017 23:49
Benzo(b)fluoranthene	< 0.015		0.015	0.041	mg/Kg-dry	10	23-May-2017 23:49
Benzo(k)fluoranthene	< 0.011		0.011	0.041	mg/Kg-dry	10	23-May-2017 23:49
Chrysene	0.048		0.010	0.041	mg/Kg-dry	10	23-May-2017 23:49
Dibenz(a,h)anthracene	< 0.020		0.020	0.041	mg/Kg-dry	10	23-May-2017 23:49
Fluoranthene	0.017	J	0.014	0.041	mg/Kg-dry	10	23-May-2017 23:49
Fluorene	< 0.014		0.014	0.041	mg/Kg-dry	10	23-May-2017 23:49
Indeno(1,2,3-cd)pyrene	< 0.010		0.010	0.041	mg/Kg-dry	10	23-May-2017 23:49
Naphthalene	< 0.0075		0.0075	0.041	mg/Kg-dry	10	23-May-2017 23:49
Pyrene	0.018	J	0.0075	0.041	mg/Kg-dry	10	23-May-2017 23:49
Surr: 2-Fluorobiphenyl	79.8			43-125	%REC	10	23-May-2017 23:49
Surr: 4-Terphenyl-d14	88.2			32-125	%REC	10	23-May-2017 23:49
Surr: Nitrobenzene-d5	77.8			37-125	%REC	10	23-May-2017 23:49
TPH DRO/ORO BY SW8015C			Method:SW8015M			Prep:SW3541 / 23-May-2017 Analyst: AAP	
TPH (Diesel Range)	260		3.1	11	mg/Kg-dry	5	26-May-2017 03:50
TPH (Motor Oil Range)	390		3.1	21	mg/Kg-dry	5	26-May-2017 03:50
Surr: 2-Fluorobiphenyl	91.7			60-135	%REC	5	26-May-2017 03:50
TRIVALENT CHROMIUM			Method:Calculation			Analyst: DQ	
Chromium, Trivalent	15.6		0.876	6.26	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO			Method:La29B SAR			Analyst: RPM	
Sodium Adsorption Ratio	10.6		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB02 (4-4.5)
 Collection Date: 16-May-2017 17:15

ANALYTICAL REPORT

WorkOrder:HS17051011
 Lab ID:HS17051011-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	134		5.00	5.00	mg/L	10	30-May-2017 16:56
Magnesium	17.2		5.00	5.00	mg/L	10	30-May-2017 16:56
Sodium	490		5.00	5.00	mg/L	10	30-May-2017 16:56
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	186		25.0	25.0	mg/Kg	1	01-Jun-2017 11:40
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 22-May-2017		Analyst: JDE	
Arsenic	5.26		0.118	0.590	mg/Kg-dry	1	22-May-2017 21:05
Boron	13.0		1.65	2.95	mg/Kg-dry	1	22-May-2017 21:05
Cadmium	0.197	J	0.0590	0.590	mg/Kg-dry	1	22-May-2017 21:05
Chromium	15.6		0.106	0.590	mg/Kg-dry	1	22-May-2017 21:05
Copper	10.4		0.118	0.236	mg/Kg-dry	1	22-May-2017 21:05
Lead	10.2		0.0590	0.590	mg/Kg-dry	1	22-May-2017 21:05
Nickel	15.7		0.106	0.590	mg/Kg-dry	1	22-May-2017 21:05
Selenium	1.33		0.212	0.590	mg/Kg-dry	1	22-May-2017 21:05
Silver	< 0.0943		0.0943	0.590	mg/Kg-dry	1	22-May-2017 21:05
Zinc	43.8		0.295	0.590	mg/Kg-dry	1	22-May-2017 21:05
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 22-May-2017		Analyst: JC	
Mercury	0.0121		0.000599	0.00424	mg/Kg-dry	1	22-May-2017 14:57
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: DFF	
Percent Moisture	20.1		0.0100	0.0100	wt%	1	19-May-2017 12:12
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	3.34		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.376		0.376	2.51	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	8.84	H	0.100	0.100	pH Units	1	22-May-2017 12:25
Temp Deg C @pH	21.4	H	0	0	°C	1	22-May-2017 12:25

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051011

Batch ID: 1694 **Method:** VOLATILES BY SW8260C

SampleID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS17051011-01	1	4.344 (g)	5 (mL)	1.15	TerraCore (5035A)
HS17051011-02	1	4.303 (g)	5 (mL)	1.16	TerraCore (5035A)
HS17051011-03	1	4.369000000 00001 (g)	5 (mL)	1.14	TerraCore (5035A)
HS17051011-04	1	4.554 (g)	5 (mL)	1.1	TerraCore (5035A)
HS17051011-05	1	5.217 (g)	5 (mL)	0.96	TerraCore (5035A)
HS17051011-06	1	5.877 (g)	5 (mL)	0.85	TerraCore (5035A)

Batch ID: 1695 **Method:** GASOLINE RANGE ORGANICS BY SW8015C **Prep:**

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS17051011-01	1	4.780000000 00001 (g)	5 (mL)	1.05	TerraCore (5035A)
HS17051011-02	1	4.21 (g)	5 (mL)	1.19	TerraCore (5035A)
HS17051011-03	1	4.48 (g)	5 (mL)	1.12	TerraCore (5035A)
HS17051011-04	1	5.29 (g)	5 (mL)	0.95	TerraCore (5035A)
HS17051011-05	1	4.43 (g)	5 (mL)	1.13	TerraCore (5035A)
HS17051011-06	1	5.820000000 00001 (g)	5 (mL)	0.86	TerraCore (5035A)

Batch ID: 116371 **Method:** TPH DRO/ORO BY SW8015C **Prep:** 8015SPR_LL

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS17051011-01	1	20.02	3 (mL)	0.1499	
HS17051011-02	1	30.08	1 (mL)	0.03324	
HS17051011-03	1	30.06	1 (mL)	0.03327	
HS17051011-04	1	30.04	1 (mL)	0.03329	
HS17051011-05	1	30.07	1 (mL)	0.03326	
HS17051011-06	1	30.05	1 (mL)	0.03328	

Batch ID: 116401 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3541_B_LOW

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS17051011-01	1	20.06	3 (mL)	0.1496	
HS17051011-02	1	30.08	1 (mL)	0.03324	
HS17051011-03	1	30.02	1 (mL)	0.03331	

Batch ID: 116423 **Method:** MERCURY BY SW7471B **Prep:** HG_S_LOWPR

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS17051011-01	1	0.5745	40 (mL)	69.63	
HS17051011-02	1	0.5874	40 (mL)	68.1	
HS17051011-03	1	0.5687	40 (mL)	70.34	
HS17051011-04	1	0.5887	40 (mL)	67.95	
HS17051011-05	1	0.5575	40 (mL)	71.75	
HS17051011-06	1	0.5895	40 (mL)	67.85	

WEIGHT LOG

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051011

Batch ID: 116428 **Method:** METALS BY SW6020A **Prep:** 3050_I_LOW

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17051011-01	1	0.5206	50 (mL)	96.04
HS17051011-02	1	0.5354	50 (mL)	93.39
HS17051011-03	1	0.5384	50 (mL)	92.87
HS17051011-04	1	0.5283	50 (mL)	94.64
HS17051011-05	1	0.5241	50 (mL)	95.4
HS17051011-06	1	0.5307	50 (mL)	94.22

Batch ID: 116445 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3541_B_LOW

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17051011-04	1	30.01	1 (mL)	0.03332
HS17051011-05	1	30.05	1 (mL)	0.03328
HS17051011-06	1	30.09	1 (mL)	0.03323

Batch ID: 116607 **Method:** HEXAVALENT CHROMIUM BY SW7196A **Prep:** CR6_S_PR3060A

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17051011-01	1	2.5546	100 (mL)	39.15
HS17051011-02	1	2.5159	100 (mL)	39.75
HS17051011-03	1	2.5341	100 (mL)	39.46
HS17051011-04	1	2.52	100 (mL)	39.68
HS17051011-05	1	2.4963	100 (mL)	40.06
HS17051011-06	1	2.4942	100 (mL)	40.09

Batch ID: 116712 **Method:** LA29B TOTAL TRUE BARIUM **Prep:** LADNR BAPR

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17051011-01	1	0.0122	50 (mL)	4098
HS17051011-02	1	0.0122	50 (mL)	4098
HS17051011-03	1	0.0106	50 (mL)	4717
HS17051011-04	1	0.0102	50 (mL)	4902
HS17051011-05	1	0.01	50 (mL)	5000
HS17051011-06	1	0.0101	50 (mL)	4950

Batch ID: 116767 **Method:** LA 29B - 1:1 SOLUBLE CATIONS FOR SAR **Prep:** LA29B SAR CATPR

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17051011-01	1	100.022	100 (mL)	0.9998
HS17051011-02	1	100.032	100 (mL)	0.9997
HS17051011-03	1	100.0339	100 (mL)	0.9997
HS17051011-04	1	100.0774	100 (mL)	0.9992
HS17051011-05	1	100.004	100 (mL)	1
HS17051011-06	1	100.0071	100 (mL)	0.9999

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051011

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 116371 Test Name : TPH DRO/ORO BY SW8015C Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22		23 May 2017 15:17	26 May 2017 02:13	200
HS17051011-02	SB01 (6-9)	15 May 2017 17:15		23 May 2017 15:17	26 May 2017 11:32	50
HS17051011-03	MW5 (7-9)	16 May 2017 10:10		23 May 2017 15:17	25 May 2017 16:52	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02		23 May 2017 15:17	25 May 2017 17:16	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10		23 May 2017 15:17	26 May 2017 03:26	50
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15		23 May 2017 15:17	26 May 2017 03:50	5
Batch ID 116401 Test Name : LOW-LEVEL SEMIVOLATILES BY 8270D Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22		19 May 2017 12:25	23 May 2017 20:56	10
HS17051011-02	SB01 (6-9)	15 May 2017 17:15		19 May 2017 12:25	24 May 2017 12:52	10
HS17051011-03	MW5 (7-9)	16 May 2017 10:10		19 May 2017 12:25	23 May 2017 20:17	1
Batch ID 116423 Test Name : MERCURY BY SW7471B Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22		22 May 2017 09:44	22 May 2017 14:49	1
HS17051011-02	SB01 (6-9)	15 May 2017 17:15		22 May 2017 09:44	22 May 2017 14:51	1
HS17051011-03	MW5 (7-9)	16 May 2017 10:10		22 May 2017 09:44	22 May 2017 14:52	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02		22 May 2017 09:44	22 May 2017 14:54	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10		22 May 2017 09:44	22 May 2017 14:56	1
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15		22 May 2017 09:44	22 May 2017 14:57	1
Batch ID 116428 Test Name : METALS BY SW6020A Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22		22 May 2017 11:59	22 May 2017 20:17	1
HS17051011-02	SB01 (6-9)	15 May 2017 17:15		22 May 2017 11:59	22 May 2017 20:21	1
HS17051011-03	MW5 (7-9)	16 May 2017 10:10		22 May 2017 11:59	22 May 2017 20:52	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02		22 May 2017 11:59	22 May 2017 20:56	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10		22 May 2017 11:59	22 May 2017 21:01	1
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15		22 May 2017 11:59	22 May 2017 21:05	1
Batch ID 116445 Test Name : LOW-LEVEL SEMIVOLATILES BY 8270D Matrix: Soil						
HS17051011-04	MW4 (8-10)	16 May 2017 14:02		22 May 2017 15:41	23 May 2017 23:09	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10		22 May 2017 15:41	24 May 2017 00:09	10
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15		22 May 2017 15:41	23 May 2017 23:49	10
Batch ID 116607 Test Name : HEXAVALENT CHROMIUM BY SW7196A Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22		26 May 2017 11:02	26 May 2017 15:22	1
HS17051011-02	SB01 (6-9)	15 May 2017 17:15		26 May 2017 11:02	26 May 2017 15:22	1
HS17051011-03	MW5 (7-9)	16 May 2017 10:10		26 May 2017 11:02	26 May 2017 15:22	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02		26 May 2017 11:02	26 May 2017 15:22	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10		26 May 2017 11:02	26 May 2017 15:22	1
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15		26 May 2017 11:02	26 May 2017 15:22	1

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051011

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 116712 Test Name : LA29B TOTAL TRUE BARIUM Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22		31 May 2017 09:20	01 Jun 2017 11:08	1
HS17051011-02	SB01 (6-9)	15 May 2017 17:15		31 May 2017 09:20	01 Jun 2017 11:11	1
HS17051011-03	MW5 (7-9)	16 May 2017 10:10		31 May 2017 09:20	01 Jun 2017 11:32	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02		31 May 2017 09:20	01 Jun 2017 11:35	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10		31 May 2017 09:20	01 Jun 2017 11:38	1
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15		31 May 2017 09:20	01 Jun 2017 11:40	1
Batch ID 116767 Test Name : LA 29B - 1:1 SOLUBLE CATIONS FOR SAR Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22		24 May 2017 16:00	30 May 2017 14:05	10
HS17051011-02	SB01 (6-9)	15 May 2017 17:15		24 May 2017 16:00	30 May 2017 14:08	10
HS17051011-03	MW5 (7-9)	16 May 2017 10:10		24 May 2017 16:00	30 May 2017 14:11	10
HS17051011-04	MW4 (8-10)	16 May 2017 14:02		24 May 2017 16:00	30 May 2017 16:50	20
HS17051011-04	MW4 (8-10)	16 May 2017 14:02		24 May 2017 16:00	30 May 2017 14:14	10
HS17051011-05	SB04 (4-5)	17 May 2017 09:10		24 May 2017 16:00	30 May 2017 16:53	10
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15		24 May 2017 16:00	30 May 2017 16:56	10
Batch ID R295078 Test Name : VOLATILES BY SW8260C Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22			22 May 2017 21:13	1
HS17051011-02	SB01 (6-9)	15 May 2017 17:15			22 May 2017 18:58	1
HS17051011-03	MW5 (7-9)	16 May 2017 10:10			22 May 2017 19:25	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02			22 May 2017 19:52	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10			22 May 2017 20:46	1
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15			22 May 2017 20:19	1
Batch ID R295081 Test Name : PH SOIL BY SW9045D Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22			22 May 2017 12:25	1
HS17051011-02	SB01 (6-9)	15 May 2017 17:15			22 May 2017 12:25	1
HS17051011-03	MW5 (7-9)	16 May 2017 10:10			22 May 2017 12:25	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02			22 May 2017 12:25	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10			22 May 2017 12:25	1
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15			22 May 2017 12:25	1
Batch ID R295129 Test Name : MOISTURE - ASTM D2216 Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22			19 May 2017 12:12	1
HS17051011-02	SB01 (6-9)	15 May 2017 17:15			19 May 2017 12:12	1
HS17051011-03	MW5 (7-9)	16 May 2017 10:10			19 May 2017 12:12	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02			19 May 2017 12:12	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10			19 May 2017 12:12	1
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15			19 May 2017 12:12	1

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051011

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R295209 Test Name : GASOLINE RANGE ORGANICS BY SW8015C Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22			23 May 2017 13:18	1
HS17051011-02	SB01 (6-9)	15 May 2017 17:15			23 May 2017 13:34	1
HS17051011-03	MW5 (7-9)	16 May 2017 10:10			23 May 2017 13:50	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02			23 May 2017 14:06	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10			23 May 2017 14:22	1
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15			23 May 2017 14:38	1
Batch ID R295527 Test Name : TRIVALENT CHROMIUM Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22			31 May 2017 11:17	1
HS17051011-02	SB01 (6-9)	15 May 2017 17:15			31 May 2017 11:17	1
HS17051011-03	MW5 (7-9)	16 May 2017 10:10			31 May 2017 11:17	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02			31 May 2017 11:17	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10			31 May 2017 11:17	1
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15			31 May 2017 11:17	1
Batch ID R295544 Test Name : LA29B ELECTRICAL CONDUCTIVITY Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22			30 May 2017 15:15	1
HS17051011-02	SB01 (6-9)	15 May 2017 17:15			30 May 2017 15:15	1
HS17051011-03	MW5 (7-9)	16 May 2017 10:10			30 May 2017 15:15	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02			30 May 2017 15:15	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10			30 May 2017 15:15	1
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15			30 May 2017 15:15	1
Batch ID R295643 Test Name : LA29B SODIUM ADSORPTION RATIO Matrix: Soil						
HS17051011-01	SB01 (3.5-4.5)	15 May 2017 16:22			01 Jun 2017 14:20	1
HS17051011-02	SB01 (6-9)	15 May 2017 17:15			01 Jun 2017 14:20	1
HS17051011-03	MW5 (7-9)	16 May 2017 10:10			01 Jun 2017 14:20	1
HS17051011-04	MW4 (8-10)	16 May 2017 14:02			01 Jun 2017 14:20	1
HS17051011-05	SB04 (4-5)	17 May 2017 09:10			01 Jun 2017 14:20	1
HS17051011-06	SB02 (4-4.5)	16 May 2017 17:15			01 Jun 2017 14:20	1

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116371		Instrument: FID-7		Method: SW8015M					
MBLK	Sample ID: MBLK-116371	Units: mg/Kg		Analysis Date: 23-May-2017 19:32					
Client ID:	Run ID: FID-8_295348	SeqNo: 4101394		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	< 0.50	1.7							
<i>Surr: 2-Fluorobiphenyl</i>	2.075	0.10	3.33	0	62.3	60 - 135			
MBLK	Sample ID: MBLK-116371	Units: mg/Kg		Analysis Date: 23-May-2017 19:32					
Client ID:	Run ID: FID-7_295281	SeqNo: 4100028		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	< 0.50	1.7							
TPH (Motor Oil Range)	< 0.50	3.4							
<i>Surr: 2-Fluorobiphenyl</i>	2.075	0.10	3.33	0	62.3	60 - 135			
LCS	Sample ID: LCS-116371	Units: mg/Kg		Analysis Date: 23-May-2017 19:57					
Client ID:	Run ID: FID-8_295348	SeqNo: 4101395		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	31.25	1.7	33.33	0	93.8	70 - 130			
<i>Surr: 2-Fluorobiphenyl</i>	2.741	0.10	3.33	0	82.3	60 - 135			
LCS	Sample ID: LCS-116371	Units: mg/Kg		Analysis Date: 23-May-2017 19:57					
Client ID:	Run ID: FID-7_295281	SeqNo: 4100029		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	31.25	1.7	33.33	0	93.8	70 - 130			
TPH (Motor Oil Range)	26.96	3.4	33.33	0	80.9	70 - 130			
<i>Surr: 2-Fluorobiphenyl</i>	2.741	0.10	3.33	0	82.3	60 - 135			
MS	Sample ID: HS17051072-01MS	Units: mg/Kg		Analysis Date: 23-May-2017 20:45					
Client ID:	Run ID: FID-8_295348	SeqNo: 4101397		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	31.45	1.7	33.27	2.298	87.6	70 - 130			
<i>Surr: 2-Fluorobiphenyl</i>	2.425	0.10	3.324	0	73.0	60 - 135			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116371		Instrument: FID-7		Method: SW8015M					
MS	Sample ID: HS17051072-01MS	Units: mg/Kg		Analysis Date: 23-May-2017 20:45					
Client ID:	Run ID: FID-7_295281	SeqNo: 4100031		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
TPH (Diesel Range)	31.45	1.7	33.27	2.298	87.6	70 - 130			
TPH (Motor Oil Range)	46.22	3.4	33.27	19.07	81.6	70 - 130			
Surr: 2-Fluorobiphenyl	2.425	0.10	3.324	0	73.0	60 - 135			

MSD	Sample ID: HS17051072-01MSD	Units: mg/Kg		Analysis Date: 23-May-2017 21:10					
Client ID:	Run ID: FID-8_295348	SeqNo: 4101398		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
TPH (Diesel Range)	30.72	1.7	33.25	2.298	85.5	70 - 130	31.45	2.33	30
Surr: 2-Fluorobiphenyl	2.311	0.10	3.322	0	69.6	60 - 135	2.425	4.84	30

MSD	Sample ID: HS17051072-01MSD	Units: mg/Kg		Analysis Date: 23-May-2017 21:10					
Client ID:	Run ID: FID-7_295281	SeqNo: 4100032		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
TPH (Diesel Range)	30.72	1.7	33.25	2.298	85.5	70 - 130	31.45	2.33	30
TPH (Motor Oil Range)	44.1	3.4	33.25	19.07	75.3	70 - 130	46.22	4.7	30
Surr: 2-Fluorobiphenyl	2.311	0.10	3.322	0	69.6	60 - 135	2.425	4.84	30

The following samples were analyzed in this batch:

HS17051011-01	HS17051011-02	HS17051011-03	HS17051011-04
HS17051011-05	HS17051011-06		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: R295209		Instrument: FID-14		Method: SW8015						
MBLK	Sample ID: GBLK-170523	Units: mg/Kg			Analysis Date: 23-May-2017 12:45					
Client ID:	Run ID: FID-14_295209	SeqNo: 4098929			PrepDate:			DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	< 0.010	0.050								
Surr: 4-Bromofluorobenzene	0.08264	0.0050	0.1	0	82.6	70 - 130				
LCS	Sample ID: GLCS-170523	Units: mg/Kg			Analysis Date: 23-May-2017 12:13					
Client ID:	Run ID: FID-14_295209	SeqNo: 4098928			PrepDate:			DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.085	0.050	1	0	109	70 - 130				
Surr: 4-Bromofluorobenzene	0.08628	0.0050	0.1	0	86.3	70 - 130				
MS	Sample ID: HS17051011-02MS	Units: mg/Kg			Analysis Date: 23-May-2017 16:56					
Client ID: SB01 (6-9)	Run ID: FID-14_295209	SeqNo: 4098937			PrepDate:			DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.167	0.050	1	0.05992	111	70 - 130				
Surr: 4-Bromofluorobenzene	0.09098	0.0050	0.1	0	91.0	70 - 130				
MSD	Sample ID: HS17051011-02MSD	Units: mg/Kg			Analysis Date: 23-May-2017 17:12					
Client ID: SB01 (6-9)	Run ID: FID-14_295209	SeqNo: 4098938			PrepDate:			DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	1.101	0.050	1	0.05992	104	70 - 130	1.167	5.84	30	
Surr: 4-Bromofluorobenzene	0.08942	0.0050	0.1	0	89.4	70 - 130	0.09098	1.72	30	
The following samples were analyzed in this batch:										
		HS17051011-01		HS17051011-02		HS17051011-03		HS17051011-04		
		HS17051011-05		HS17051011-06						

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116423		Instrument: HG03		Method: SW7471A						
MBLK	Sample ID: MBLK-116423	Units: ug/Kg			Analysis Date: 22-May-2017 14:39					
Client ID:	Run ID: HG03_295115	SeqNo: 4097085			PrepDate: 22-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit Qual		
Mercury	< 0.483	3.42								
LCS	Sample ID: LCS-116423	Units: ug/Kg			Analysis Date: 22-May-2017 14:40					
Client ID:	Run ID: HG03_295115	SeqNo: 4097086			PrepDate: 22-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit Qual		
Mercury	329.3	3.39	340.2	0	96.8	85 - 115				
MS	Sample ID: HS17051047-02MS	Units: ug/Kg			Analysis Date: 22-May-2017 15:19					
Client ID:	Run ID: HG03_295115	SeqNo: 4097104			PrepDate: 22-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit Qual		
Mercury	364.2	3.45	346.2	0.2141	105	85 - 115				
MSD	Sample ID: HS17051047-02MSD	Units: ug/Kg			Analysis Date: 22-May-2017 15:20					
Client ID:	Run ID: HG03_295115	SeqNo: 4097105			PrepDate: 22-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit Qual		
Mercury	360.3	3.40	340.5	0.2141	106	85 - 115		364.2	1.08	20
The following samples were analyzed in this batch:										
HS17051011-01			HS17051011-02		HS17051011-03			HS17051011-04		
HS17051011-05			HS17051011-06							

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116428		Instrument: ICPMS04		Method: SW6020						
MBLK	Sample ID: MBLK-116428	Units: mg/Kg		Analysis Date: 22-May-2017 19:54						
Client ID:	Run ID: ICPMS04_295077	SeqNo: 4097564		PrepDate: 22-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	< 0.100	0.500								
Boron	< 1.40	2.50								
Cadmium	< 0.0500	0.500								
Chromium	< 0.0900	0.500								
Copper	< 0.100	0.200								
Lead	< 0.0500	0.500								
Nickel	< 0.0900	0.500								
Selenium	< 0.180	0.500								
Silver	< 0.0800	0.500								
Zinc	< 0.250	0.500								

LCS	Sample ID: LCS-116428	Units: mg/Kg		Analysis Date: 22-May-2017 19:59						
Client ID:	Run ID: ICPMS04_295077	SeqNo: 4097565		PrepDate: 22-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.454	0.500	10	0	94.5	80 - 120				
Boron	47.33	2.50	50	0	94.7	80 - 120				
Cadmium	9.744	0.500	10	0	97.4	80 - 120				
Chromium	9.684	0.500	10	0	96.8	80 - 120				
Copper	9.721	0.200	10	0	97.2	80 - 120				
Lead	9.841	0.500	10	0	98.4	80 - 120				
Nickel	9.702	0.500	10	0	97.0	80 - 120				
Selenium	9.398	0.500	10	0	94.0	80 - 120				
Silver	9.634	0.500	10	0	96.3	80 - 120				
Zinc	9.609	0.500	10	0	96.1	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Rangley CS47
 WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116428		Instrument: ICPMS04		Method: SW6020						
MS		Sample ID: HS17051011-02MS		Units: mg/Kg		Analysis Date: 22-May-2017 20:39				
Client ID: SB01 (6-9)		Run ID: ICPMS04_295077		SeqNo: 4097574		PrepDate: 22-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.08	0.471	9.427	2.171	94.5	75 - 125				
Boron	55.02	2.36	47.13	4.043	108	75 - 125				
Cadmium	9.56	0.471	9.427	0.1005	100	75 - 125				
Chromium	15.57	0.471	9.427	4.379	119	75 - 125				
Copper	14.11	0.189	9.427	5.071	95.9	75 - 125				
Lead	15.53	0.471	9.427	5.78	103	75 - 125				
Nickel	14.99	0.471	9.427	5.689	98.7	75 - 125				
Selenium	9.317	0.471	9.427	0.6549	91.9	75 - 125				
Silver	8.932	0.471	9.427	0.02083	94.5	75 - 125				
Zinc	35.51	0.471	9.427	25.88	102	75 - 125				

MSD		Sample ID: HS17051011-02MSD		Units: mg/Kg		Analysis Date: 22-May-2017 20:43				
Client ID: SB01 (6-9)		Run ID: ICPMS04_295077		SeqNo: 4097575		PrepDate: 22-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.03	0.468	9.353	2.171	94.7	75 - 125	11.08	0.503	20	
Boron	54.01	2.34	46.76	4.043	107	75 - 125	55.02	1.84	20	
Cadmium	9.072	0.468	9.353	0.1005	95.9	75 - 125	9.56	5.23	20	
Chromium	15.54	0.468	9.353	4.379	119	75 - 125	15.57	0.204	20	
Copper	13.78	0.187	9.353	5.071	93.1	75 - 125	14.11	2.41	20	
Lead	14.76	0.468	9.353	5.78	96.0	75 - 125	15.53	5.1	20	
Nickel	14.65	0.468	9.353	5.689	95.8	75 - 125	14.99	2.31	20	
Selenium	9.562	0.468	9.353	0.6549	95.2	75 - 125	9.317	2.59	20	
Silver	8.483	0.468	9.353	0.02083	90.5	75 - 125	8.932	5.16	20	
Zinc	34.9	0.468	9.353	25.88	96.5	75 - 125	35.51	1.71	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116428		Instrument: ICPMS04		Method: SW6020						
PDS		Sample ID: HS17051011-02PDS		Units: mg/Kg		Analysis Date: 22-May-2017 20:47				
Client ID: SB01 (6-9)		Run ID: ICPMS04_295077		SeqNo: 4097576		PrepDate: 22-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.69	0.467	9.341	2.171	91.2	75 - 125				
Boron	118.9	2.34	93.41	4.043	123	75 - 125				
Cadmium	9.161	0.467	9.341	0.1005	97.0	75 - 125				
Chromium	12.96	0.467	9.341	4.379	91.8	75 - 125				
Copper	13.32	0.187	9.341	5.071	88.3	75 - 125				
Lead	14.92	0.467	9.341	5.78	97.8	75 - 125				
Nickel	13.85	0.467	9.341	5.689	87.4	75 - 125				
Selenium	9.177	0.467	9.341	0.6549	91.2	75 - 125				
Silver	8.873	0.467	9.341	0.02083	94.8	75 - 125				
Zinc	33.49	0.467	9.341	25.88	81.5	75 - 125				

SD		Sample ID: HS17051011-02SD		Units: mg/Kg		Analysis Date: 22-May-2017 20:25				
Client ID: SB01 (6-9)		Run ID: ICPMS04_295077		SeqNo: 4097571		PrepDate: 22-May-2017		DF: 5		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	RPD Limit	Qual
Arsenic	2.326	2.34					2.171	0	10	J
Boron	< 6.54	11.7					4.043	0	10	
Cadmium	< 0.234	2.34					0.1005	0	10	
Chromium	4.698	2.34					4.379	7.29	10	
Copper	5.554	0.934					5.071	9.51	10	
Lead	6.023	2.34					5.78	4.21	10	
Nickel	6.121	2.34					5.689	7.59	10	
Selenium	< 0.841	2.34					0.6549	0	10	
Silver	< 0.374	2.34					0.02083	0	10	
Zinc	27.93	2.34					25.88	7.9	10	

The following samples were analyzed in this batch:

HS17051011-01	HS17051011-02	HS17051011-03	HS17051011-04
HS17051011-05	HS17051011-06		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116712		Instrument: ICPMS05		Method: LADNR Ba						
MS	Sample ID: HS17051011-02MS	Units: mg/Kg			Analysis Date: 01-Jun-2017 11:17					
Client ID: SB01 (6-9)	Run ID: ICPMS05_295620	SeqNo: 4107517		PrepDate: 31-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Barium, Total	213.1	25.0	200	27.85	92.6	75 - 125				
MSD	Sample ID: HS17051011-02MSD	Units: mg/Kg			Analysis Date: 01-Jun-2017 11:26					
Client ID: SB01 (6-9)	Run ID: ICPMS05_295620	SeqNo: 4107520		PrepDate: 31-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Barium, Total	198	25.0	200	27.85	85.1	75 - 125	213.1	7.34	30	
SD	Sample ID: HS17051011-02SD	Units: mg/Kg			Analysis Date: 01-Jun-2017 11:14					
Client ID: SB01 (6-9)	Run ID: ICPMS05_295620	SeqNo: 4107516		PrepDate: 31-May-2017		DF: 5				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	RPD Limit	Qual
Barium, Total	< 125	125					27.85	0	10	
The following samples were analyzed in this batch:		HS17051011-01		HS17051011-02		HS17051011-03		HS17051011-04		
		HS17051011-05		HS17051011-06						

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116767		Instrument: ICPMS05		Method: La29B-6020						
MBLK	Sample ID: MBLK-116767	Units: mg/L			Analysis Date: 30-May-2017 13:32					
Client ID:	Run ID: ICPMS05_295427	SeqNo: 4104267		PrepDate: 24-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Calcium	< 0.500	0.500								
Magnesium	< 0.500	0.500								
Sodium	< 0.500	0.500								
DUP	Sample ID: HS17051096-07DUP	Units: mg/L			Analysis Date: 30-May-2017 14:02					
Client ID:	Run ID: ICPMS05_295427	SeqNo: 4104277		PrepDate: 24-May-2017		DF: 10				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Calcium	152	5.00					196	25.3	30	
Magnesium	93.66	5.00					113.5	19.2	30	
Sodium	1195	5.00					1350	12.2	30	
The following samples were analyzed in this batch:		HS17051011-01 HS17051011-05		HS17051011-02 HS17051011-06		HS17051011-03		HS17051011-04		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: R295643		Instrument: MISC-Metals		Method: La29B SAR						
DUP	Sample ID: HS17051096-07DUP	Units: meq/meq			Analysis Date: 01-Jun-2017 14:20					
Client ID:	Run ID: MISC-Metals_295643	SeqNo: 4107679		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	18.88	0.0100					18.97	0.513	30	

The following samples were analyzed in this batch:

HS17051011-01	HS17051011-02	HS17051011-03	HS17051011-04
HS17051011-05	HS17051011-06		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116401		Instrument: SV-7		Method: SW8270						
MBLK	Sample ID: MBLK-116401	Units: ug/Kg		Analysis Date: 22-May-2017 12:05						
Client ID:	Run ID: SV-7_295097	SeqNo: 4096797		PrepDate: 19-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	< 0.50	3.3								
Anthracene	< 0.50	3.3								
Benz(a)anthracene	< 1.6	3.3								
Benzo(a)pyrene	< 1.0	3.3								
Benzo(b)fluoranthene	< 1.2	3.3								
Benzo(k)fluoranthene	< 0.90	3.3								
Chrysene	< 0.80	3.3								
Dibenz(a,h)anthracene	< 1.6	3.3								
Fluoranthene	< 1.1	3.3								
Fluorene	< 1.1	3.3								
Indeno(1,2,3-cd)pyrene	< 0.80	3.3								
Naphthalene	< 0.60	3.3								
Pyrene	< 0.60	3.3								
<i>Surr: 2-Fluorobiphenyl</i>	<i>173.7</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>104</i>	<i>43 - 125</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>167.7</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>100</i>	<i>32 - 125</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>172.3</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>103</i>	<i>37 - 125</i>				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116401		Instrument: SV-7		Method: SW8270						
LCS		Sample ID: LCS-116401		Units: ug/Kg		Analysis Date: 22-May-2017 11:44				
Client ID:		Run ID: SV-7_295097		SeqNo: 4096796		PrepDate: 19-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	148.3	3.3	167	0	88.8	50 - 120				
Anthracene	156.6	3.3	167	0	93.8	50 - 123				
Benz(a)anthracene	157.6	3.3	167	0	94.4	50 - 131				
Benzo(a)pyrene	142	3.3	167	0	85.1	50 - 130				
Benzo(b)fluoranthene	165.8	3.3	167	0	99.3	50 - 137				
Benzo(k)fluoranthene	130.9	3.3	167	0	78.4	50 - 143				
Chrysene	159.5	3.3	167	0	95.5	50 - 130				
Dibenz(a,h)anthracene	162.7	3.3	167	0	97.4	50 - 130				
Fluoranthene	157.8	3.3	167	0	94.5	50 - 131				
Fluorene	164.8	3.3	167	0	98.7	50 - 125				
Indeno(1,2,3-cd)pyrene	178	3.3	167	0	107	45 - 139				
Naphthalene	139.9	3.3	167	0	83.7	50 - 125				
Pyrene	158.8	3.3	167	0	95.1	45 - 130				
<i>Surr: 2-Fluorobiphenyl</i>	<i>143.6</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>86.0</i>	<i>43 - 125</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>144.1</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>86.3</i>	<i>32 - 125</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>134.7</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>80.7</i>	<i>37 - 125</i>				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116401		Instrument: SV-7		Method: SW8270					
MS		Sample ID: HS17050702-01MS		Units: ug/Kg		Analysis Date: 22-May-2017 12:47			
Client ID:		Run ID: SV-7_295097		SeqNo: 4097185		PrepDate: 19-May-2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	107.3	3.3	166.6	0	64.4	50 - 120			
Anthracene	134.3	3.3	166.6	0	80.6	50 - 123			
Benz(a)anthracene	143.7	3.3	166.6	0	86.2	50 - 131			
Benzo(a)pyrene	130.4	3.3	166.6	0	78.3	50 - 130			
Benzo(b)fluoranthene	149.8	3.3	166.6	0	89.9	50 - 137			
Benzo(k)fluoranthene	120.5	3.3	166.6	0	72.3	50 - 143			
Chrysene	146.7	3.3	166.6	0	88.1	50 - 130			
Dibenz(a,h)anthracene	139.1	3.3	166.6	0	83.5	50 - 130			
Fluoranthene	142.3	3.3	166.6	0	85.4	50 - 131			
Fluorene	127.2	3.3	166.6	1.233	75.6	50 - 125			
Indeno(1,2,3-cd)pyrene	161.6	3.3	166.6	0	97.0	45 - 139			
Naphthalene	107	3.3	166.6	4.315	61.6	50 - 125			
Pyrene	144.1	3.3	166.6	0.7524	86.0	45 - 130			
<i>Surr: 2-Fluorobiphenyl</i>	<i>98.4</i>	<i>0</i>	<i>166.6</i>	<i>0</i>	<i>59.1</i>	<i>43 - 125</i>			
<i>Surr: 4-Terphenyl-d14</i>	<i>131.1</i>	<i>0</i>	<i>166.6</i>	<i>0</i>	<i>78.7</i>	<i>32 - 125</i>			
<i>Surr: Nitrobenzene-d5</i>	<i>99.2</i>	<i>0</i>	<i>166.6</i>	<i>0</i>	<i>59.5</i>	<i>37 - 125</i>			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Rangley CS47
 WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116401		Instrument: SV-7		Method: SW8270						
MSD		Sample ID: HS17050702-01MSD		Units: ug/Kg		Analysis Date: 22-May-2017 13:09				
Client ID:		Run ID: SV-7_295097		SeqNo: 4097186		PrepDate: 19-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	104.6	3.3	166.5	0	62.8	50 - 120	107.3	2.48	30	
Anthracene	134.8	3.3	166.5	0	81.0	50 - 123	134.3	0.376	30	
Benz(a)anthracene	144.2	3.3	166.5	0	86.6	50 - 131	143.7	0.351	30	
Benzo(a)pyrene	134.5	3.3	166.5	0	80.8	50 - 130	130.4	3.06	30	
Benzo(b)fluoranthene	143.2	3.3	166.5	0	86.0	50 - 137	149.8	4.54	30	
Benzo(k)fluoranthene	137.8	3.3	166.5	0	82.8	50 - 143	120.5	13.4	30	
Chrysene	145.8	3.3	166.5	0	87.6	50 - 130	146.7	0.617	30	
Dibenz(a,h)anthracene	155.4	3.3	166.5	0	93.3	50 - 130	139.1	11.1	30	
Fluoranthene	141.8	3.3	166.5	0	85.2	50 - 131	142.3	0.324	30	
Fluorene	124.1	3.3	166.5	1.233	73.8	50 - 125	127.2	2.53	30	
Indeno(1,2,3-cd)pyrene	171.5	3.3	166.5	0	103	45 - 139	161.6	5.98	30	
Naphthalene	104.4	3.3	166.5	4.315	60.1	50 - 125	107	2.44	30	
Pyrene	144.6	3.3	166.5	0.7524	86.4	45 - 130	144.1	0.379	30	
Surr: 2-Fluorobiphenyl	95.87	0	166.5	0	57.6	43 - 125	98.4	2.61	30	
Surr: 4-Terphenyl-d14	130.2	0	166.5	0	78.2	32 - 125	131.1	0.683	30	
Surr: Nitrobenzene-d5	96.26	0	166.5	0	57.8	37 - 125	99.2	3.01	30	
The following samples were analyzed in this batch:										
HS17051011-01		HS17051011-02		HS17051011-03						

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116445		Instrument: SV-7		Method: SW8270						
MBLK	Sample ID: MBLK-116445	Units: ug/Kg		Analysis Date: 23-May-2017 15:22						
Client ID:	Run ID: SV-7_295183	SeqNo: 4098478		PrepDate: 22-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	< 0.50	3.3								
Anthracene	< 0.50	3.3								
Benz(a)anthracene	< 1.6	3.3								
Benzo(a)pyrene	< 1.0	3.3								
Benzo(b)fluoranthene	< 1.2	3.3								
Benzo(k)fluoranthene	< 0.90	3.3								
Chrysene	< 0.80	3.3								
Dibenz(a,h)anthracene	< 1.6	3.3								
Fluoranthene	< 1.1	3.3								
Fluorene	< 1.1	3.3								
Indeno(1,2,3-cd)pyrene	< 0.80	3.3								
Naphthalene	< 0.60	3.3								
Pyrene	< 0.60	3.3								
<i>Surr: 2-Fluorobiphenyl</i>	<i>159.1</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>95.3</i>	<i>43 - 125</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>158</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>94.6</i>	<i>32 - 125</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>159.5</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>95.5</i>	<i>37 - 125</i>				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116445		Instrument: SV-7		Method: SW8270						
LCS		Sample ID: LCS-116445		Units: ug/Kg		Analysis Date: 23-May-2017 15:42				
Client ID:		Run ID: SV-7_295183		SeqNo: 4098836		PrepDate: 22-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	157.2	3.3	167	0	94.1	50 - 120				
Anthracene	146.5	3.3	167	0	87.7	50 - 123				
Benz(a)anthracene	154.4	3.3	167	0	92.4	50 - 131				
Benzo(a)pyrene	156	3.3	167	0	93.4	50 - 130				
Benzo(b)fluoranthene	174.7	3.3	167	0	105	50 - 137				
Benzo(k)fluoranthene	162.2	3.3	167	0	97.1	50 - 143				
Chrysene	156.6	3.3	167	0	93.8	50 - 130				
Dibenz(a,h)anthracene	177.8	3.3	167	0	106	50 - 130				
Fluoranthene	154.7	3.3	167	0	92.6	50 - 131				
Fluorene	149.6	3.3	167	0	89.6	50 - 125				
Indeno(1,2,3-cd)pyrene	174.7	3.3	167	0	105	45 - 139				
Naphthalene	147.3	3.3	167	0	88.2	50 - 125				
Pyrene	155.6	3.3	167	0	93.2	45 - 130				
Surr: 2-Fluorobiphenyl	148	0	167	0	88.6	43 - 125				
Surr: 4-Terphenyl-d14	150	0	167	0	89.8	32 - 125				
Surr: Nitrobenzene-d5	146.8	0	167	0	87.9	37 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116445		Instrument: SV-7		Method: SW8270					
MS		Sample ID: HS17051047-02MS		Units: ug/Kg		Analysis Date: 23-May-2017 17:24			
Client ID:		Run ID: SV-7_295183		SeqNo: 4098809		PrepDate: 22-May-2017		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	155.2	3.3	166.6	0	93.1	50 - 120			
Anthracene	151.7	3.3	166.6	1.934	89.9	50 - 123			
Benz(a)anthracene	159.7	3.3	166.6	1.721	94.8	50 - 131			
Benzo(a)pyrene	148.3	3.3	166.6	0.8078	88.5	50 - 130			
Benzo(b)fluoranthene	158.7	3.3	166.6	1.038	94.6	50 - 137			
Benzo(k)fluoranthene	141.6	3.3	166.6	0.8134	84.5	50 - 143			
Chrysene	166.5	3.3	166.6	6.517	96.0	50 - 130			
Dibenz(a,h)anthracene	171	3.3	166.6	0	103	50 - 130			
Fluoranthene	150.2	3.3	166.6	4.392	87.5	50 - 131			
Fluorene	160.9	3.3	166.6	0.4197	96.3	50 - 125			
Indeno(1,2,3-cd)pyrene	166.4	3.3	166.6	0.971	99.3	45 - 139			
Naphthalene	139.8	3.3	166.6	2.094	82.6	50 - 125			
Pyrene	163.1	3.3	166.6	3.504	95.8	45 - 130			
<i>Surr: 2-Fluorobiphenyl</i>	<i>150.3</i>	<i>0</i>	<i>166.6</i>	<i>0</i>	<i>90.2</i>	<i>43 - 125</i>			
<i>Surr: 4-Terphenyl-d14</i>	<i>158.5</i>	<i>0</i>	<i>166.6</i>	<i>0</i>	<i>95.1</i>	<i>32 - 125</i>			
<i>Surr: Nitrobenzene-d5</i>	<i>148.5</i>	<i>0</i>	<i>166.6</i>	<i>0</i>	<i>89.1</i>	<i>37 - 125</i>			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116445		Instrument: SV-7		Method: SW8270					
MSD	Sample ID: HS17051047-02MSD	Units: ug/Kg		Analysis Date: 23-May-2017 17:44					
Client ID:	Run ID: SV-7_295183	SeqNo: 4098810		PrepDate: 22-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Acenaphthene	147.3	3.3	166.7	0	88.4	50 - 120	155.2	5.19	30
Anthracene	148.7	3.3	166.7	1.934	88.0	50 - 123	151.7	2.02	30
Benz(a)anthracene	154.1	3.3	166.7	1.721	91.4	50 - 131	159.7	3.57	30
Benzo(a)pyrene	144.5	3.3	166.7	0.8078	86.2	50 - 130	148.3	2.6	30
Benzo(b)fluoranthene	169.2	3.3	166.7	1.038	101	50 - 137	158.7	6.44	30
Benzo(k)fluoranthene	144.4	3.3	166.7	0.8134	86.1	50 - 143	141.6	1.97	30
Chrysene	159	3.3	166.7	6.517	91.5	50 - 130	166.5	4.62	30
Dibenz(a,h)anthracene	165.5	3.3	166.7	0	99.3	50 - 130	171	3.26	30
Fluoranthene	151.5	3.3	166.7	4.392	88.2	50 - 131	150.2	0.854	30
Fluorene	144.7	3.3	166.7	0.4197	86.5	50 - 125	160.9	10.6	30
Indeno(1,2,3-cd)pyrene	171	3.3	166.7	0.971	102	45 - 139	166.4	2.78	30
Naphthalene	131.1	3.3	166.7	2.094	77.4	50 - 125	139.8	6.41	30
Pyrene	159.1	3.3	166.7	3.504	93.3	45 - 130	163.1	2.47	30
<i>Surr: 2-Fluorobiphenyl</i>	<i>132</i>	<i>0</i>	<i>166.7</i>	<i>0</i>	<i>79.2</i>	<i>43 - 125</i>	<i>150.3</i>	<i>13</i>	<i>30</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>150</i>	<i>0</i>	<i>166.7</i>	<i>0</i>	<i>90.0</i>	<i>32 - 125</i>	<i>158.5</i>	<i>5.45</i>	<i>30</i>
<i>Surr: Nitrobenzene-d5</i>	<i>132.1</i>	<i>0</i>	<i>166.7</i>	<i>0</i>	<i>79.3</i>	<i>37 - 125</i>	<i>148.5</i>	<i>11.7</i>	<i>30</i>
The following samples were analyzed in this batch: HS17051011-04 HS17051011-05 HS17051011-06									

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: R295078		Instrument: VOA8		Method: SW8260					
MBLK	Sample ID: VBLKS1-052217	Units: ug/Kg		Analysis Date: 22-May-2017 10:52					
Client ID:	Run ID: VOA8_295078	SeqNo: 4096546		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 0.50	5.0							
Ethylbenzene	< 0.70	5.0							
Toluene	< 0.60	5.0							
Xylenes, Total	< 1.0	5.0							
Surr: 1,2-Dichloroethane-d4	46.64	0	50	0	93.3	70 - 128			
Surr: 4-Bromofluorobenzene	46.1	0	50	0	92.2	73 - 126			
Surr: Dibromofluoromethane	50.57	0	50	0	101	71 - 128			
Surr: Toluene-d8	52.03	0	50	0	104	73 - 127			

LCS	Sample ID: VLCSS1-052217	Units: ug/Kg		Analysis Date: 22-May-2017 10:26					
Client ID:	Run ID: VOA8_295078	SeqNo: 4096545		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	40.91	5.0	50	0	81.8	79 - 122			
Ethylbenzene	42.32	5.0	50	0	84.6	80 - 122			
Toluene	40.03	5.0	50	0	80.1	79 - 120			
Xylenes, Total	127.1	5.0	150	0	84.7	79 - 123			
Surr: 1,2-Dichloroethane-d4	51.44	0	50	0	103	70 - 128			
Surr: 4-Bromofluorobenzene	48.27	0	50	0	96.5	73 - 126			
Surr: Dibromofluoromethane	51.93	0	50	0	104	71 - 128			
Surr: Toluene-d8	51.31	0	50	0	103	73 - 127			

MS	Sample ID: HS17051056-01MS	Units: ug/Kg		Analysis Date: 22-May-2017 14:01					
Client ID:	Run ID: VOA8_295078	SeqNo: 4096804		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	40.63	5.0	50	0	81.3	79 - 122			
Ethylbenzene	40.02	5.0	50	0	80.0	80 - 122			
Toluene	40.05	5.0	50	0	80.1	79 - 120			
Xylenes, Total	119.4	5.0	150	0	79.6	79 - 123			
Surr: 1,2-Dichloroethane-d4	47.21	0	50	0	94.4	70 - 128			
Surr: 4-Bromofluorobenzene	48.53	0	50	0	97.1	73 - 126			
Surr: Dibromofluoromethane	45.36	0	50	0	90.7	71 - 128			
Surr: Toluene-d8	51.07	0	50	0	102	73 - 127			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Rangley CS47
 WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: R295078		Instrument: VOA8		Method: SW8260					
MSD	Sample ID: HS17051056-01MSD	Units: ug/Kg			Analysis Date: 22-May-2017 14:28				
Client ID:	Run ID: VOA8_295078	SeqNo: 4096805		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Benzene	47.68	5.0	49.5	0	96.3	79 - 122	40.63	16	30
Ethylbenzene	45.79	5.0	49.5	0	92.5	80 - 122	40.02	13.5	30
Toluene	44.53	5.0	49.5	0	90.0	79 - 120	40.05	10.6	30
Xylenes, Total	136.3	5.0	148.5	0	91.8	79 - 123	119.4	13.2	30
Surr: 1,2-Dichloroethane-d4	46.83	0	49.5	0	94.6	70 - 128	47.21	0.814	30
Surr: 4-Bromofluorobenzene	47.71	0	49.5	0	96.4	73 - 126	48.53	1.69	30
Surr: Dibromofluoromethane	40.66	0	49.5	0	82.1	71 - 128	45.36	10.9	30
Surr: Toluene-d8	49.4	0	49.5	0	99.8	73 - 127	51.07	3.33	30
The following samples were analyzed in this batch:		HS17051011-01 HS17051011-05		HS17051011-02 HS17051011-06		HS17051011-03		HS17051011-04	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: 116607		Instrument: UV-2450		Method: SW7196						
MBLK	Sample ID: MBLK-116607	Units: mg/kg		Analysis Date: 26-May-2017 15:22						
Client ID:		Run ID: UV-2450_295458		SeqNo: 4103797		PrepDate: 26-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	< 0.300	2.00								
LCS	Sample ID: LCS-116607	Units: mg/kg		Analysis Date: 26-May-2017 15:22						
Client ID:		Run ID: UV-2450_295458		SeqNo: 4103796		PrepDate: 26-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	10.76	2.00	10	0	108	80 - 120				
MS	Sample ID: HS17051011-02MS	Units: mg/kg		Analysis Date: 26-May-2017 15:22						
Client ID: SB01 (6-9)		Run ID: UV-2450_295458		SeqNo: 4103794		PrepDate: 26-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	10.63	1.99	9.953	0.07949	106	75 - 125				
MSD	Sample ID: HS17051011-02MSD	Units: mg/kg		Analysis Date: 26-May-2017 15:22						
Client ID: SB01 (6-9)		Run ID: UV-2450_295458		SeqNo: 4103795		PrepDate: 26-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	10.56	1.98	9.921	0.07949	106	75 - 125	10.63	0.697	20	
The following samples were analyzed in this batch:										
			HS17051011-01	HS17051011-02	HS17051011-03	HS17051011-04				
			HS17051011-05	HS17051011-06						

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: R295081		Instrument: WetChem_HS		Method: SW9045B	
DUP	Sample ID: HS17051035-01DUP	Units: pH Units		Analysis Date: 22-May-2017 12:25	
Client ID:	Run ID: WetChem_HS_295081	SeqNo: 4096604		PrepDate:	DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC Control Limit RPD Ref Value %RPD RPD Limit Qual
pH	8.57	0.100			8.52 0.585 10
Temp Deg C @pH	21.6	0			21.7 0.462 10
The following samples were analyzed in this batch:					
HS17051011-01		HS17051011-02		HS17051011-03	
HS17051011-05		HS17051011-06		HS17051011-04	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: R295129		Instrument: Balance1		Method: ASTM D2216					
DUP	Sample ID: HS17051011-06DUP	Units: wt%		Analysis Date: 19-May-2017 12:12					
Client ID: SB02 (4-4.5)	Run ID: Balance1_295129		SeqNo: 4097314		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Percent Moisture	20.2	0.0100					20.1	0.496	20

The following samples were analyzed in this batch:

HS17051011-01	HS17051011-02	HS17051011-03	HS17051011-04
HS17051011-05	HS17051011-06		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

QC BATCH REPORT

Batch ID: R295544		Instrument: WetChem_HS		Method: LaDNR-29B EC					
DUP	Sample ID: HS17051096-07DUP	Units: mmhos/cm @25°C		Analysis Date: 30-May-2017 15:15					
Client ID:		Run ID: WetChem_HS_295544		SeqNo: 4107074		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Electrical Conductivity, 1:1 aqueous	7.83	0.0100					8.98	13.7	20
The following samples were analyzed in this batch:									
HS17051011-01			HS17051011-02		HS17051011-03		HS17051011-04		
HS17051011-05			HS17051011-06						

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051011

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	17-027-0	27-Mar-2018
California	2919 2016-2018	31-Jul-2018
Illinois	004112	09-May-2018
Kansas	E-10352 2016-2017	31-Jul-2017
Louisiana	03087 2016-2017	30-Jun-2017
North Carolina	624-2017	31-Dec-2017
Oklahoma	2016-122	31-Aug-2017
Texas	T104704231-17-18	30-Apr-2018

Client: Stantec
Project: Chevron Ranglely CS47
Work Order: HS17051011

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS17051011-01	SB01 (3.5-4.5)	Login	5/18/2017 7:32:46 PM	RPG	VOA087
HS17051011-01	SB01 (3.5-4.5)	Login	5/18/2017 7:32:46 PM	RPG	SPA054
HS17051011-01	SB01 (3.5-4.5)	Login	5/18/2017 7:32:46 PM	RPG	SPA054
HS17051011-01	SB01 (3.5-4.5)	Login	5/18/2017 7:32:46 PM	RPG	VOA069
HS17051011-01	SB01 (3.5-4.5)	Login	5/18/2017 7:32:46 PM	RPG	VOA069
HS17051011-02	SB01 (6-9)	Login	5/18/2017 7:32:47 PM	RPG	VOA087
HS17051011-02	SB01 (6-9)	Login	5/18/2017 7:32:47 PM	RPG	SPA054
HS17051011-02	SB01 (6-9)	Login	5/18/2017 7:32:47 PM	RPG	SPA054
HS17051011-02	SB01 (6-9)	Login	5/18/2017 7:32:47 PM	RPG	VOA069
HS17051011-02	SB01 (6-9)	Login	5/18/2017 7:32:47 PM	RPG	VOA069
HS17051011-03	MW5 (7-9)	Login	5/18/2017 7:32:47 PM	RPG	VOA087
HS17051011-03	MW5 (7-9)	Login	5/18/2017 7:32:47 PM	RPG	SPA054
HS17051011-03	MW5 (7-9)	Login	5/18/2017 7:32:47 PM	RPG	SPA054
HS17051011-03	MW5 (7-9)	Login	5/18/2017 7:32:47 PM	RPG	VOA069
HS17051011-03	MW5 (7-9)	Login	5/18/2017 7:32:47 PM	RPG	VOA069
HS17051011-04	MW4 (8-10)	Login	5/18/2017 7:32:47 PM	RPG	VOA087
HS17051011-04	MW4 (8-10)	Login	5/18/2017 7:32:47 PM	RPG	SPA054
HS17051011-04	MW4 (8-10)	Login	5/18/2017 7:32:47 PM	RPG	SPA054
HS17051011-04	MW4 (8-10)	Login	5/18/2017 7:32:47 PM	RPG	VOA069
HS17051011-04	MW4 (8-10)	Login	5/18/2017 7:32:47 PM	RPG	VOA069
HS17051011-05	SB04 (4-5)	Login	5/18/2017 7:32:47 PM	RPG	VOA087
HS17051011-05	SB04 (4-5)	Login	5/18/2017 7:32:47 PM	RPG	SPA054
HS17051011-05	SB04 (4-5)	Login	5/18/2017 7:32:47 PM	RPG	SPA054
HS17051011-05	SB04 (4-5)	Login	5/18/2017 7:32:47 PM	RPG	VOA069
HS17051011-05	SB04 (4-5)	Login	5/18/2017 7:32:47 PM	RPG	VOA069
HS17051011-06	SB02 (4-4.5)	Login	5/18/2017 7:43:03 PM	RPG	VOA087
HS17051011-06	SB02 (4-4.5)	Login	5/18/2017 7:43:03 PM	RPG	SPA054
HS17051011-06	SB02 (4-4.5)	Login	5/18/2017 7:43:03 PM	RPG	SPA054
HS17051011-06	SB02 (4-4.5)	Login	5/18/2017 7:43:03 PM	RPG	VOA069
HS17051011-06	SB02 (4-4.5)	Login	5/18/2017 7:43:03 PM	RPG	VOA069

Sample Receipt Checklist

Client Name: Stantec Denver
Work Order: HS17051011

Date/Time Received: **18-May-2017 08:45**
Received by: **NDR**

Checklist completed by: Cesar A. Lira 18-May-2017 Reviewed by: Dane J. Wacasey 22-May-2017
eSignature Date eSignature Date

Matrices: **Soil**Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
TX1005 solids received in hermetically sealed vials?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

Temperature(s)/Thermometer(s): 4.6c/4.8c uc/c IR15

Cooler(s)/Kit(s): 25569

Date/Time sample(s) sent to storage: 5/18/2017 1945

Water - VOA vials have zero headspace? Yes ☐ No ☐ No VOA vials submitted ☒Water - pH acceptable upon receipt? Yes ☐ No ☐ N/A ☒pH adjusted? Yes ☐ No ☐ N/A ☒pH adjusted by:

Login Notes: Following Sample received not on listed COC:
SB02 (4-4.5 5/16/2017 17:15). Logged for all analyses per PM.
Trip Blank 050117-11 placed on hold, not listed on COC.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments: Corrective Action:



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Chain of Custody Form

Page ____ of ____

COC ID: 158850

HS17051011

Stantec
Chevron Rangley CS47



IV

ALS Project Manager:

Customer Information

Project Information

Purchase Order		Project Name	Chevron Rangley CS47	A	5035/8260 - BTEX
Work Order		Project Number		B	5035/8015 - TPH-GRO
Company Name	Stantec	Bill To Company	Stantec	C	8015 - TPH-DRO
Send Report To	Christopher Beall	Invoice Attn		D	8270 - PAHs*
Address	2000 South Colorado Boulevard	Address	2000 South Colorado Boulevard	E	6020/7471 - Total Metals*
City/State/Zip	Denver, CO 80222	City/State/Zip	Denver CO 80222	F	7196 - Hexavalent Cr / Trivalent Cr
Phone	(303) 285-4541	Phone	(303) 285-4541	G	La29B - E.C., pH, SAR, True Tot. Ba, H2O sol. B
Fax		Fax		H	Moist%
e-Mail Address	Christopher.Beall@stantec.com	e-Mail Address		I	
				J	

Io.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SB01 (3.5-4.5)	5/15/17	1622	Soil		8	X	X	X	X	X	X	X	X			
2	SB01 (6-9)	5/15/17	1715	SL		8	X	X	X	X	X	X	X	X			
3	MW5 (7-9)	5/16/17	1010	SL		8	X	X	X	X	X	X	X	X			
4	MW4 (8-10)	5/16/17	1402	SL		8	X	X	X	X	X	X	X	X			
5	SB04 (4-5)	5/17/17	0910	SL		8	X	X	X	X	X	X	X	X			
6																	
7																	
8																	
9																	
0																	

Sampler(s) Please Print & Sign

Brian Bass / B - Bass

Shipment Method

Required Turnaround Time: (Check Box)

☒ STD 10 Wk Days

☐ 5 Wk Days

☐ 2 Wk Days

☐ 24 Hour

Other

Results Due Date:

Relinquished by:

Relinquished by:

Date: 5/17/17

Time: 1230

Received by:

Date: 5/17/17

Time: 1800

Received by (Laboratory):

Checked by (Laboratory):

Notes: * See Attached Table 910 to ensure all AAH metals analyzed

Cooler ID

Cooler Temp.

QC Package: (Check One Box Below)

☒ Level II Std QC

☐ Level III Std QC/Raw Date

☐ Level IV SW846/CLP

☐ Other

TRRP Checklist

TRRP Level IV

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₄ 7-Other 8-4°C 9-5035

Notes: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.

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Chain of Custody Form

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Page of

COC ID: 158850

Customer Information		Project Information		Parameter/Method Request for Analysis														
Purchase Order		Project Name	Chevron Rangley CS47	A	5035/8260 - BTEX													
Work Order		Project Number		B	5035/8015 - TPH-GRO													
Company Name	Stantec	Bill To Company	Stantec	C	8015 - TPH-DRO													
Send Report To	Christopher Beall	Invoice Attn		D	8270 - PAHs *													
Address	2000 South Colorado Boulevard	Address	2000 South Colorado Boulevard	E	6020/7471 - Total Metals *													
				F	7196 - Hexavalent Cr / Trivalent Cr -													
City/State/Zip	Denver, CO 80222	City/State/Zip	Denver CO 80222	G	La29B - E.C., pH, SAR, True Tot. Ba, H2O sol. B													
Phone	(303) 285-4541	Phone	(303) 285-4541	H	Moist%													
Fax		Fax		I														
e-Mail Address	Christopher.Beall@stantec.com	e-Mail Address		J														

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SBP1 (3-5)	5/15/12	1632	Soil		8	X	X	X	X	X	X	X	X			
2	SBP1 (6-9)	5/15/12	1210	L		2	X	X	X	X	X	X	X	X			
3	MW3 (7-9)	5/16/12	1010	SL		2	X	X	X	X	X	X	X	X			
4	MW4 (7-10)	5/16/12	1402	SL		2	X	X	X	X	X	X	X	X			
5	SBP4 (4-5)	5/16/12	0910	SL		8	X	X	X	X	X	X	X	X			
6	SBP2 (4-5)	5/16/12	1715	SL		8	X	X	X	X	X	X	X	X			
7	BB 5/30/12																
8																	
9																	
10																	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:			
				<input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour							
Relinquished by:	Date:	Time:	Received by:	Notes: * See Attached Table 910 to CREW ID all PAH							
	5/17/12	1230									
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)					
						<input checked="" type="checkbox"/> Level II Std. Lab <input type="checkbox"/> Level III Std. Lab <input type="checkbox"/> Level IV SW-846/CLP <input type="checkbox"/> Other					
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):								

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₄ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
 3. The Chain of Custody is a legal document. All information must be completed accurately.

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CUSTODY SEAL		Seal Broken By:
Date: 5-17-17	Time: 1:10	CM
Name: ALS		Date: 5/18/17
Company:		



ALS
 10450 Standliff Rd., Suite 210
 Houston, Texas 77099
 Tel. +1 281 530 5656
 Fax. +1 281 530 5387

25569 MAY 18 2017


 K# 6786 7205 5808
 0221

THU - 18 MAY 10:30A
 PRIORITY OVERNIGHT

XH SGRA

25569

77099
 TX-US
 IAH



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

June 02, 2017

Christopher Beall
Stantec
2000 South Colorado Boulevard Suite 2-300

Denver, CO 80222

Work Order: **HS17051096**

Laboratory Results for: **Chevron Ranglely CS47**

Dear Christopher,

ALS Environmental received 8 sample(s) on May 20, 2017 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: Dayna.Fisher
Dane J. Wacasey

Client: Stantec
Project: Chevron Ranglely CS47
Work Order: HS17051096

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS17051096-01	SB03 (9-11)	Soil		17-May-2017 14:05	20-May-2017 09:55	<input type="checkbox"/>
HS17051096-02	SB05 (4-4.5)	Soil		18-May-2017 10:00	20-May-2017 09:55	<input type="checkbox"/>
HS17051096-03	SB05 (11-13)	Soil		18-May-2017 10:15	20-May-2017 09:55	<input type="checkbox"/>
HS17051096-04	SB05 (18-20)	Soil		18-May-2017 10:40	20-May-2017 09:55	<input type="checkbox"/>
HS17051096-05	SB06 (4-5)	Soil		18-May-2017 11:10	20-May-2017 09:55	<input type="checkbox"/>
HS17051096-06	SB06 (7-10)	Soil		18-May-2017 11:30	20-May-2017 09:55	<input type="checkbox"/>
HS17051096-07	SB05 (8-10)	Soil		18-May-2017 10:00	20-May-2017 09:55	<input type="checkbox"/>
HS17051096-08	Trip Blank 050117-12	Water		17-May-2017 00:00	20-May-2017 09:55	<input checked="" type="checkbox"/>

Client: Stantec
Project: Chevron Ranglely CS47
Work Order: HS17051096

CASE NARRATIVE**Work Order Comments**

- Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.
The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

GC Semivolatiles by Method SW8015M**Batch ID: 116371****Sample ID: SB03 (9-11) (HS17051096-01)**

- Due to sample matrix interferences, the surrogate recovery was outside of the established control limits.

Sample ID: SB05 (11-13) (HS17051096-03)

- Due to sample matrix interferences, the surrogate recovery was outside of the established control limits.

Sample ID: SB05 (4-4.5) (HS17051096-02)

- Due to sample matrix interferences, the surrogate recovery was outside of the established control limits.

Sample ID: SB05 (8-10) (HS17051096-07)

- Due to sample matrix interferences, the surrogate recovery was outside of the established control limits.

Sample ID: SB06 (4-5) (HS17051096-05)

- Due to sample matrix interferences, the surrogate recovery was outside of the established control limits.

Sample ID: SB06 (7-10) (HS17051096-06)

- Due to sample matrix interferences, the surrogate recovery was outside of the established control limits.

GC Volatiles by Method SW8015**Batch ID: R295357****Sample ID: SB05 (18-20) (HS17051096-04)**

- Surrogate recovery was below acceptance limits. Re-extraction and/or reanalysis confirm low recovery caused by matrix effect.

Batch ID: R295209,R295282

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GCMS Semivolatiles by Method SW8270**Batch ID: 116477****Sample ID: HS17051094-03**

- MS and MSD are for an unrelated sample

Sample ID: SB03 (9-11) (HS17051096-01)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: SB05 (11-13) (HS17051096-03)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Client: Stantec
Project: Chevron Ranglely CS47
Work Order: HS17051096

CASE NARRATIVE

GCMS Semivolatiles by Method SW8270**Batch ID: 116477****Sample ID: SB05 (4-4.5) (HS17051096-02)**

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: SB05 (8-10) (HS17051096-07)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: SB06 (4-5) (HS17051096-05)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

Sample ID: SB06 (7-10) (HS17051096-06)

- The GCMS semi-volatile extract of this sample was run at a dilution due to a high level of matrix interference.

GCMS Volatiles by Method SW8260**Batch ID: R295272****Sample ID: SB05 (4-4.5) (HS17051096-02)**

- Surrogates failure for HS17051096-02 due to sample matrix.

Batch ID: R295155**Sample ID: HS17051075-01**

- MS and MSD are for an unrelated sample

Metals by Method La29B SAR**Batch ID: R295643**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method LADNR Ba**Batch ID: 116712**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method Calculation**Batch ID: R295527**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method La29B-6020**Batch ID: 116767**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW6020**Batch ID: 116556**

Client: Stantec
Project: Chevron Ranglely CS47
Work Order: HS17051096

CASE NARRATIVE

Metals by Method SW6020

Batch ID: 116556

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method SW7471A

Batch ID: 116548

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method ASTM D2216

Batch ID: R295393

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method LaDNR-29B EC

Batch ID: R295544

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW9045B

Batch ID: R295311

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

WetChemistry by Method SW7196

Batch ID: 116607

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
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Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB03 (9-11)
 Collection Date: 17-May-2017 14:05

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
Benzene	< 0.031		0.031	0.31	mg/Kg-dry	50	23-May-2017 18:41
Ethylbenzene	0.84		0.043	0.31	mg/Kg-dry	50	23-May-2017 18:41
Toluene	< 0.037		0.037	0.31	mg/Kg-dry	50	23-May-2017 18:41
Xylenes, Total	1.4		0.062	0.31	mg/Kg-dry	50	23-May-2017 18:41
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>97.7</i>			<i>70-128</i>	<i>%REC</i>	<i>50</i>	<i>23-May-2017 18:41</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>108</i>			<i>73-126</i>	<i>%REC</i>	<i>50</i>	<i>23-May-2017 18:41</i>
<i>Surr: Dibromofluoromethane</i>	<i>98.1</i>			<i>71-128</i>	<i>%REC</i>	<i>50</i>	<i>23-May-2017 18:41</i>
<i>Surr: Toluene-d8</i>	<i>102</i>			<i>73-127</i>	<i>%REC</i>	<i>50</i>	<i>23-May-2017 18:41</i>
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: SFE			
Gasoline Range Organics	1,000		7.7	39	mg/Kg-dry	500	24-May-2017 15:03
<i>Surr: 4-Bromofluorobenzene</i>	<i>119</i>			<i>70-130</i>	<i>%REC</i>	<i>500</i>	<i>24-May-2017 15:03</i>
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 23-May-2017		Analyst: GEY	
Acenaphthene	0.11		0.0056	0.037	mg/Kg-dry	10	24-May-2017 14:32
Anthracene	0.34		0.0056	0.037	mg/Kg-dry	10	24-May-2017 14:32
Benz(a)anthracene	0.18		0.018	0.037	mg/Kg-dry	10	24-May-2017 14:32
Benzo(a)pyrene	< 0.011		0.011	0.037	mg/Kg-dry	10	24-May-2017 14:32
Benzo(b)fluoranthene	< 0.014		0.014	0.037	mg/Kg-dry	10	24-May-2017 14:32
Benzo(k)fluoranthene	< 0.010		0.010	0.037	mg/Kg-dry	10	24-May-2017 14:32
Chrysene	0.20		0.0090	0.037	mg/Kg-dry	10	24-May-2017 14:32
Dibenz(a,h)anthracene	< 0.018		0.018	0.037	mg/Kg-dry	10	24-May-2017 14:32
Fluoranthene	< 0.012		0.012	0.037	mg/Kg-dry	10	24-May-2017 14:32
Fluorene	0.095		0.012	0.037	mg/Kg-dry	10	24-May-2017 14:32
Indeno(1,2,3-cd)pyrene	< 0.0090		0.0090	0.037	mg/Kg-dry	10	24-May-2017 14:32
Naphthalene	0.26		0.0068	0.037	mg/Kg-dry	10	24-May-2017 14:32
Pyrene	< 0.0068		0.0068	0.037	mg/Kg-dry	10	24-May-2017 14:32
<i>Surr: 2-Fluorobiphenyl</i>	<i>71.5</i>			<i>43-125</i>	<i>%REC</i>	<i>10</i>	<i>24-May-2017 14:32</i>
<i>Surr: 4-Terphenyl-d14</i>	<i>84.4</i>			<i>32-125</i>	<i>%REC</i>	<i>10</i>	<i>24-May-2017 14:32</i>
<i>Surr: Nitrobenzene-d5</i>	<i>98.6</i>			<i>37-125</i>	<i>%REC</i>	<i>10</i>	<i>24-May-2017 14:32</i>
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3541 / 23-May-2017		Analyst: AAP	
TPH (Diesel Range)	4,100		110	380	mg/Kg-dry	200	25-May-2017 19:43
TPH (Motor Oil Range)	6,800		110	770	mg/Kg-dry	200	25-May-2017 19:43
<i>Surr: 2-Fluorobiphenyl</i>	<i>807</i>	<i>S</i>		<i>60-135</i>	<i>%REC</i>	<i>200</i>	<i>25-May-2017 19:43</i>
TRIVALENT CHROMIUM		Method:Calculation		Analyst: DQ			
Chromium, Trivalent	6.05		0.790	5.64	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO		Method:La29B SAR		Analyst: RPM			
Sodium Adsorption Ratio	5.56		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB03 (9-11)
 Collection Date: 17-May-2017 14:05

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-01
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	336		5.00	5.00	mg/L	10	30-May-2017 13:35
Magnesium	178		5.00	5.00	mg/L	10	30-May-2017 13:35
Sodium	507		5.00	5.00	mg/L	10	30-May-2017 13:35
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	113		25.0	25.0	mg/Kg	1	01-Jun-2017 11:43
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 25-May-2017		Analyst: JDE	
Arsenic	1.70		0.104	0.519	mg/Kg-dry	1	25-May-2017 18:04
Boron	6.07		1.45	2.60	mg/Kg-dry	1	25-May-2017 18:04
Cadmium	0.124	J	0.0519	0.519	mg/Kg-dry	1	25-May-2017 18:04
Chromium	6.05		0.0935	0.519	mg/Kg-dry	1	25-May-2017 18:04
Copper	5.15		0.104	0.208	mg/Kg-dry	1	25-May-2017 18:04
Lead	5.49		0.0519	0.519	mg/Kg-dry	1	25-May-2017 18:04
Nickel	6.11		0.0935	0.519	mg/Kg-dry	1	25-May-2017 18:04
Selenium	0.617		0.187	0.519	mg/Kg-dry	1	25-May-2017 18:04
Silver	< 0.0831		0.0831	0.519	mg/Kg-dry	1	25-May-2017 18:04
Zinc	27.2		0.260	0.519	mg/Kg-dry	1	25-May-2017 18:04
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 25-May-2017		Analyst: JC	
Mercury	0.0137		0.000570	0.00403	mg/Kg-dry	1	25-May-2017 14:38
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JBA	
Percent Moisture	11.4		0.0100	0.0100	wt%	1	26-May-2017 10:42
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	5.03		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.334		0.334	2.22	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	8.56	H	0.100	0.100	pH Units	1	25-May-2017 13:30
Temp Deg C @pH	21.4	H	0	0	°C	1	25-May-2017 13:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB05 (4-4.5)
 Collection Date: 18-May-2017 10:00

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
Benzene	0.092		0.00062	0.0062	mg/Kg-dry	1	24-May-2017 21:24
Ethylbenzene	0.021		0.00087	0.0062	mg/Kg-dry	1	24-May-2017 21:24
Toluene	0.024		0.00075	0.0062	mg/Kg-dry	1	24-May-2017 21:24
Xylenes, Total	0.040		0.0012	0.0062	mg/Kg-dry	1	24-May-2017 21:24
Surr: 1,2-Dichloroethane-d4	129	S		70-128	%REC	1	24-May-2017 21:24
Surr: 4-Bromofluorobenzene	72.9	S		73-126	%REC	1	24-May-2017 21:24
Surr: Dibromofluoromethane	117			71-128	%REC	1	24-May-2017 21:24
Surr: Toluene-d8	114			73-127	%REC	1	24-May-2017 21:24
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: SFE			
Gasoline Range Organics	1.2		0.011	0.057	mg/Kg-dry	1	23-May-2017 18:17
Surr: 4-Bromofluorobenzene	88.4			70-130	%REC	1	23-May-2017 18:17
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 23-May-2017		Analyst: GEY	
Acenaphthene	< 0.0060		0.0060	0.040	mg/Kg-dry	10	24-May-2017 14:51
Anthracene	< 0.0060		0.0060	0.040	mg/Kg-dry	10	24-May-2017 14:51
Benz(a)anthracene	< 0.019		0.019	0.040	mg/Kg-dry	10	24-May-2017 14:51
Benzo(a)pyrene	< 0.012		0.012	0.040	mg/Kg-dry	10	24-May-2017 14:51
Benzo(b)fluoranthene	< 0.014		0.014	0.040	mg/Kg-dry	10	24-May-2017 14:51
Benzo(k)fluoranthene	< 0.011		0.011	0.040	mg/Kg-dry	10	24-May-2017 14:51
Chrysene	< 0.0096		0.0096	0.040	mg/Kg-dry	10	24-May-2017 14:51
Dibenz(a,h)anthracene	< 0.019		0.019	0.040	mg/Kg-dry	10	24-May-2017 14:51
Fluoranthene	< 0.013		0.013	0.040	mg/Kg-dry	10	24-May-2017 14:51
Fluorene	< 0.013		0.013	0.040	mg/Kg-dry	10	24-May-2017 14:51
Indeno(1,2,3-cd)pyrene	< 0.0096		0.0096	0.040	mg/Kg-dry	10	24-May-2017 14:51
Naphthalene	< 0.0072		0.0072	0.040	mg/Kg-dry	10	24-May-2017 14:51
Pyrene	< 0.0072		0.0072	0.040	mg/Kg-dry	10	24-May-2017 14:51
Surr: 2-Fluorobiphenyl	66.8			43-125	%REC	10	24-May-2017 14:51
Surr: 4-Terphenyl-d14	68.9			32-125	%REC	10	24-May-2017 14:51
Surr: Nitrobenzene-d5	44.5			37-125	%REC	10	24-May-2017 14:51
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3541 / 23-May-2017		Analyst: AAP	
TPH (Diesel Range)	820		12	41	mg/Kg-dry	20	25-May-2017 20:32
TPH (Motor Oil Range)	1,500		12	82	mg/Kg-dry	20	25-May-2017 20:32
Surr: 2-Fluorobiphenyl	160	S		60-135	%REC	20	25-May-2017 20:32
TRIVALENT CHROMIUM		Method:Calculation		Analyst: DQ			
Chromium, Trivalent	8.68		0.846	6.05	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO		Method:La29B SAR		Analyst: RPM			
Sodium Adsorption Ratio	17.5		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB05 (4-4.5)
 Collection Date: 18-May-2017 10:00

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-02
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	164		5.00	5.00	mg/L	10	30-May-2017 13:38
Magnesium	57.2		5.00	5.00	mg/L	10	30-May-2017 13:38
Sodium	1,020		5.00	5.00	mg/L	10	30-May-2017 13:38
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	135		25.0	25.0	mg/Kg	1	01-Jun-2017 11:46
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 25-May-2017		Analyst: JDE	
Arsenic	4.21		0.115	0.574	mg/Kg-dry	1	25-May-2017 18:09
Boron	12.8		1.61	2.87	mg/Kg-dry	1	25-May-2017 18:09
Cadmium	0.247	J	0.0574	0.574	mg/Kg-dry	1	25-May-2017 18:09
Chromium	8.68		0.103	0.574	mg/Kg-dry	1	25-May-2017 18:09
Copper	10.6		0.115	0.229	mg/Kg-dry	1	25-May-2017 18:09
Lead	10.1		0.0574	0.574	mg/Kg-dry	1	25-May-2017 18:09
Nickel	11.2		0.103	0.574	mg/Kg-dry	1	25-May-2017 18:09
Selenium	1.16		0.206	0.574	mg/Kg-dry	1	25-May-2017 18:09
Silver	< 0.0918		0.0918	0.574	mg/Kg-dry	1	25-May-2017 18:09
Zinc	48.2		0.287	0.574	mg/Kg-dry	1	25-May-2017 18:09
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 25-May-2017		Analyst: JC	
Mercury	0.0236		0.000610	0.00431	mg/Kg-dry	1	25-May-2017 14:40
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JBA	
Percent Moisture	17.3		0.0100	0.0100	wt%	1	26-May-2017 10:42
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	6.87		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.366		0.366	2.44	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	8.17	H	0.100	0.100	pH Units	1	25-May-2017 13:30
Temp Deg C @pH	21.4	H	0	0	°C	1	25-May-2017 13:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB05 (11-13)
 Collection Date: 18-May-2017 10:15

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
Benzene	4.8		0.078	0.78	mg/Kg-dry	100	23-May-2017 19:53
Ethylbenzene	4.1		0.11	0.78	mg/Kg-dry	100	23-May-2017 19:53
Toluene	< 0.093		0.093	0.78	mg/Kg-dry	100	23-May-2017 19:53
Xylenes, Total	31		0.16	0.78	mg/Kg-dry	100	23-May-2017 19:53
Surr: 1,2-Dichloroethane-d4	102			70-128	%REC	100	23-May-2017 19:53
Surr: 4-Bromofluorobenzene	98.3			73-126	%REC	100	23-May-2017 19:53
Surr: Dibromofluoromethane	95.9			71-128	%REC	100	23-May-2017 19:53
Surr: Toluene-d8	102			73-127	%REC	100	23-May-2017 19:53
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: SFE			
Gasoline Range Organics	1,300		1.8	8.8	mg/Kg-dry	100	24-May-2017 12:06
Surr: 4-Bromofluorobenzene	124			70-130	%REC	100	24-May-2017 12:06
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 23-May-2017		Analyst: GEY	
Acenaphthene	0.066		0.0063	0.042	mg/Kg-dry	10	24-May-2017 15:10
Anthracene	0.11		0.0063	0.042	mg/Kg-dry	10	24-May-2017 15:10
Benz(a)anthracene	0.12		0.020	0.042	mg/Kg-dry	10	24-May-2017 15:10
Benzo(a)pyrene	< 0.013		0.013	0.042	mg/Kg-dry	10	24-May-2017 15:10
Benzo(b)fluoranthene	< 0.015		0.015	0.042	mg/Kg-dry	10	24-May-2017 15:10
Benzo(k)fluoranthene	< 0.011		0.011	0.042	mg/Kg-dry	10	24-May-2017 15:10
Chrysene	0.099		0.010	0.042	mg/Kg-dry	10	24-May-2017 15:10
Dibenz(a,h)anthracene	< 0.020		0.020	0.042	mg/Kg-dry	10	24-May-2017 15:10
Fluoranthene	0.061		0.014	0.042	mg/Kg-dry	10	24-May-2017 15:10
Fluorene	0.082		0.014	0.042	mg/Kg-dry	10	24-May-2017 15:10
Indeno(1,2,3-cd)pyrene	< 0.010		0.010	0.042	mg/Kg-dry	10	24-May-2017 15:10
Naphthalene	0.48		0.0076	0.042	mg/Kg-dry	10	24-May-2017 15:10
Pyrene	0.075		0.0076	0.042	mg/Kg-dry	10	24-May-2017 15:10
Surr: 2-Fluorobiphenyl	82.8			43-125	%REC	10	24-May-2017 15:10
Surr: 4-Terphenyl-d14	84.8			32-125	%REC	10	24-May-2017 15:10
Surr: Nitrobenzene-d5	48.1			37-125	%REC	10	24-May-2017 15:10
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3541 / 23-May-2017		Analyst: AAP	
TPH (Diesel Range)	1,400		13	43	mg/Kg-dry	20	25-May-2017 21:20
TPH (Motor Oil Range)	1,600		13	86	mg/Kg-dry	20	25-May-2017 21:20
Surr: 2-Fluorobiphenyl	436	S		60-135	%REC	20	25-May-2017 21:20
TRIVALENT CHROMIUM		Method:Calculation		Analyst: DQ			
Chromium, Trivalent	10.8		0.883	6.31	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO		Method:La29B SAR		Analyst: RPM			
Sodium Adsorption Ratio	13.0		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB05 (11-13)
 Collection Date: 18-May-2017 10:15

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-03
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	220		5.00	5.00	mg/L	10	30-May-2017 13:47
Magnesium	86.2		5.00	5.00	mg/L	10	30-May-2017 13:47
Sodium	895		5.00	5.00	mg/L	10	30-May-2017 13:47
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	229		25.0	25.0	mg/Kg	1	01-Jun-2017 11:49
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 25-May-2017		Analyst: JDE	
Arsenic	6.92		0.115	0.575	mg/Kg-dry	1	25-May-2017 18:13
Boron	12.1		1.61	2.88	mg/Kg-dry	1	25-May-2017 18:13
Cadmium	0.283	J	0.0575	0.575	mg/Kg-dry	1	25-May-2017 18:13
Chromium	10.8		0.104	0.575	mg/Kg-dry	1	25-May-2017 18:13
Copper	11.6		0.115	0.230	mg/Kg-dry	1	25-May-2017 18:13
Lead	36.6		0.0575	0.575	mg/Kg-dry	1	25-May-2017 18:13
Nickel	13.3		0.104	0.575	mg/Kg-dry	1	25-May-2017 18:13
Selenium	1.16		0.207	0.575	mg/Kg-dry	1	25-May-2017 18:13
Silver	< 0.0920		0.0920	0.575	mg/Kg-dry	1	25-May-2017 18:13
Zinc	75.5		0.288	0.575	mg/Kg-dry	1	25-May-2017 18:13
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 25-May-2017		Analyst: JC	
Mercury	0.0664		0.000617	0.00437	mg/Kg-dry	1	25-May-2017 14:42
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JBA	
Percent Moisture	20.7		0.0100	0.0100	wt%	1	26-May-2017 10:42
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	6.65		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.370		0.370	2.47	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	8.29	H	0.100	0.100	pH Units	1	25-May-2017 13:30
Temp Deg C @pH	21.4	H	0	0	°C	1	25-May-2017 13:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB05 (18-20)
 Collection Date: 18-May-2017 10:40

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C			Method:SW8260			Analyst: WLR	
Benzene	0.0044	J	0.00050	0.0050	mg/Kg-dry	1	24-May-2017 21:47
Ethylbenzene	0.0021	J	0.00070	0.0050	mg/Kg-dry	1	24-May-2017 21:47
Toluene	0.0021	J	0.00060	0.0050	mg/Kg-dry	1	24-May-2017 21:47
Xylenes, Total	0.015		0.0010	0.0050	mg/Kg-dry	1	24-May-2017 21:47
Surr: 1,2-Dichloroethane-d4	103			70-128	%REC	1	24-May-2017 21:47
Surr: 4-Bromofluorobenzene	86.8			73-126	%REC	1	24-May-2017 21:47
Surr: Dibromofluoromethane	95.6			71-128	%REC	1	24-May-2017 21:47
Surr: Toluene-d8	116			73-127	%REC	1	24-May-2017 21:47
GASOLINE RANGE ORGANICS BY SW8015C			Method:SW8015			Analyst: SFE	
Gasoline Range Organics	1.3		0.0087	0.043	mg/Kg-dry	1	25-May-2017 15:33
Surr: 4-Bromofluorobenzene	67.6	S		70-130	%REC	1	25-May-2017 15:33
LOW-LEVEL SEMIVOLATILES BY 8270D			Method:SW8270			Prep:SW3541 / 23-May-2017 Analyst: GEY	
Acenaphthene	0.0020	J	0.00058	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Anthracene	0.0016	J	0.00058	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Benz(a)anthracene	0.0023	J	0.0018	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Benzo(a)pyrene	0.0014	J	0.0012	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Benzo(b)fluoranthene	0.0019	J	0.0014	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Benzo(k)fluoranthene	0.0012	J	0.0010	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Chrysene	0.0033	J	0.00092	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Dibenz(a,h)anthracene	< 0.0018		0.0018	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Fluoranthene	0.0056		0.0013	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Fluorene	0.0025	J	0.0013	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Indeno(1,2,3-cd)pyrene	0.0013	J	0.00092	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Naphthalene	0.0045		0.00069	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Pyrene	0.0063		0.00069	0.0038	mg/Kg-dry	1	24-May-2017 11:16
Surr: 2-Fluorobiphenyl	74.5			43-125	%REC	1	24-May-2017 11:16
Surr: 4-Terphenyl-d14	82.4			32-125	%REC	1	24-May-2017 11:16
Surr: Nitrobenzene-d5	71.4			37-125	%REC	1	24-May-2017 11:16
TPH DRO/ORO BY SW8015C			Method:SW8015M			Prep:SW3541 / 23-May-2017 Analyst: AAP	
TPH (Diesel Range)	2.9		0.57	2.0	mg/Kg-dry	1	25-May-2017 16:27
TPH (Motor Oil Range)	5.1		0.57	3.9	mg/Kg-dry	1	25-May-2017 16:27
Surr: 2-Fluorobiphenyl	67.9			60-135	%REC	1	25-May-2017 16:27
TRIVALENT CHROMIUM			Method:Calculation			Analyst: DQ	
Chromium, Trivalent	11.9		0.807	5.77	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO			Method:La29B SAR			Analyst: RPM	
Sodium Adsorption Ratio	6.96		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB05 (18-20)
 Collection Date: 18-May-2017 10:40

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-04
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	191		5.00	5.00	mg/L	10	30-May-2017 13:50
Magnesium	53.5		5.00	5.00	mg/L	10	30-May-2017 13:50
Sodium	422		5.00	5.00	mg/L	10	30-May-2017 13:50
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	464		25.0	25.0	mg/Kg	1	01-Jun-2017 11:52
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 25-May-2017		Analyst: JDE	
Arsenic	5.74		0.108	0.540	mg/Kg-dry	1	25-May-2017 18:17
Boron	11.3		1.51	2.70	mg/Kg-dry	1	25-May-2017 18:17
Cadmium	0.261	J	0.0540	0.540	mg/Kg-dry	1	25-May-2017 18:17
Chromium	11.9		0.0973	0.540	mg/Kg-dry	1	25-May-2017 18:17
Copper	13.0		0.108	0.216	mg/Kg-dry	1	25-May-2017 18:17
Lead	15.1		0.0540	0.540	mg/Kg-dry	1	25-May-2017 18:17
Nickel	17.5		0.0973	0.540	mg/Kg-dry	1	25-May-2017 18:17
Selenium	1.88		0.195	0.540	mg/Kg-dry	1	25-May-2017 18:17
Silver	0.100	J	0.0864	0.540	mg/Kg-dry	1	25-May-2017 18:17
Zinc	82.3		0.270	0.540	mg/Kg-dry	1	25-May-2017 18:17
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 25-May-2017		Analyst: JC	
Mercury	0.0280		0.000555	0.00393	mg/Kg-dry	1	25-May-2017 14:43
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JBA	
Percent Moisture	13.3		0.0100	0.0100	wt%	1	26-May-2017 10:42
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	3.51		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.348		0.348	2.32	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	8.62	H	0.100	0.100	pH Units	1	25-May-2017 13:30
Temp Deg C @pH	21.5	H	0	0	°C	1	25-May-2017 13:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB06 (4-5)
 Collection Date: 18-May-2017 11:10

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
Benzene	2.6		0.044	0.44	mg/Kg-dry	50	23-May-2017 19:05
Ethylbenzene	6.3		0.062	0.44	mg/Kg-dry	50	23-May-2017 19:05
Toluene	0.17	J	0.053	0.44	mg/Kg-dry	50	23-May-2017 19:05
Xylenes, Total	18		0.089	0.44	mg/Kg-dry	50	23-May-2017 19:05
Surr: 1,2-Dichloroethane-d4	100			70-128	%REC	50	23-May-2017 19:05
Surr: 4-Bromofluorobenzene	105			73-126	%REC	50	23-May-2017 19:05
Surr: Dibromofluoromethane	96.1			71-128	%REC	50	23-May-2017 19:05
Surr: Toluene-d8	103			73-127	%REC	50	23-May-2017 19:05
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: SFE			
Gasoline Range Organics	1,100		2.3	11	mg/Kg-dry	100	24-May-2017 12:22
Surr: 4-Bromofluorobenzene	81.1			70-130	%REC	100	24-May-2017 12:22
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 23-May-2017		Analyst: GEY	
Acenaphthene	0.44		0.021	0.14	mg/Kg-dry	10	24-May-2017 16:03
Anthracene	0.93		0.021	0.14	mg/Kg-dry	10	24-May-2017 16:03
Benz(a)anthracene	1.1		0.068	0.14	mg/Kg-dry	10	24-May-2017 16:03
Benzo(a)pyrene	< 0.043		0.043	0.14	mg/Kg-dry	10	24-May-2017 16:03
Benzo(b)fluoranthene	< 0.051		0.051	0.14	mg/Kg-dry	10	24-May-2017 16:03
Benzo(k)fluoranthene	< 0.038		0.038	0.14	mg/Kg-dry	10	24-May-2017 16:03
Chrysene	1.1		0.034	0.14	mg/Kg-dry	10	24-May-2017 16:03
Dibenz(a,h)anthracene	< 0.068		0.068	0.14	mg/Kg-dry	10	24-May-2017 16:03
Fluoranthene	0.27		0.047	0.14	mg/Kg-dry	10	24-May-2017 16:03
Fluorene	0.35		0.047	0.14	mg/Kg-dry	10	24-May-2017 16:03
Indeno(1,2,3-cd)pyrene	< 0.034		0.034	0.14	mg/Kg-dry	10	24-May-2017 16:03
Naphthalene	1.8		0.026	0.14	mg/Kg-dry	10	24-May-2017 16:03
Pyrene	0.30		0.026	0.14	mg/Kg-dry	10	24-May-2017 16:03
Surr: 2-Fluorobiphenyl	72.1			43-125	%REC	10	24-May-2017 16:03
Surr: 4-Terphenyl-d14	83.2			32-125	%REC	10	24-May-2017 16:03
Surr: Nitrobenzene-d5	56.1			37-125	%REC	10	24-May-2017 16:03
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3541 / 23-May-2017		Analyst: AAP	
TPH (Diesel Range)	36,000		1100	3600	mg/Kg-dry	500	25-May-2017 22:58
TPH (Motor Oil Range)	57,000		1100	7200	mg/Kg-dry	500	25-May-2017 22:58
Surr: 2-Fluorobiphenyl	7290	S		60-135	%REC	500	25-May-2017 22:58
TRIVALENT CHROMIUM		Method:Calculation		Analyst: DQ			
Chromium, Trivalent	21.8		0.996	7.11	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO		Method:La29B SAR		Analyst: RPM			
Sodium Adsorption Ratio	19.8		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB06 (4-5)
 Collection Date: 18-May-2017 11:10

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-05
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	321		5.00	5.00	mg/L	10	30-May-2017 13:53
Magnesium	47.7		5.00	5.00	mg/L	10	30-May-2017 13:53
Sodium	1,440		5.00	5.00	mg/L	10	30-May-2017 13:53
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	255		25.0	25.0	mg/Kg	1	01-Jun-2017 12:01
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 25-May-2017		Analyst: JDE	
Arsenic	6.79		0.134	0.670	mg/Kg-dry	1	25-May-2017 18:22
Boron	17.5		1.88	3.35	mg/Kg-dry	1	25-May-2017 18:22
Cadmium	0.397	J	0.0670	0.670	mg/Kg-dry	1	25-May-2017 18:22
Chromium	21.7		0.121	0.670	mg/Kg-dry	1	25-May-2017 18:22
Copper	17.0		0.134	0.268	mg/Kg-dry	1	25-May-2017 18:22
Lead	62.0		0.0670	0.670	mg/Kg-dry	1	25-May-2017 18:22
Nickel	35.1		0.121	0.670	mg/Kg-dry	1	25-May-2017 18:22
Selenium	1.27		0.241	0.670	mg/Kg-dry	1	25-May-2017 18:22
Silver	< 0.107		0.107	0.670	mg/Kg-dry	1	25-May-2017 18:22
Zinc	111		0.335	0.670	mg/Kg-dry	1	25-May-2017 18:22
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 25-May-2017		Analyst: JC	
Mercury	0.139		0.000714	0.00505	mg/Kg-dry	1	25-May-2017 14:45
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JBA	
Percent Moisture	29.7		0.0100	0.0100	wt%	1	26-May-2017 10:42
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	9.44		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.422		0.422	2.81	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	9.14	H	0.100	0.100	pH Units	1	25-May-2017 13:30
Temp Deg C @pH	21.8	H	0	0	°C	1	25-May-2017 13:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB06 (7-10)
 Collection Date: 18-May-2017 11:30

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
Benzene	< 0.030		0.030	0.30	mg/Kg-dry	50	23-May-2017 19:29
Ethylbenzene	1.9		0.041	0.30	mg/Kg-dry	50	23-May-2017 19:29
Toluene	< 0.035		0.035	0.30	mg/Kg-dry	50	23-May-2017 19:29
Xylenes, Total	2.7		0.059	0.30	mg/Kg-dry	50	23-May-2017 19:29
<i>Surr: 1,2-Dichloroethane-d4</i>	99.4			70-128	%REC	50	23-May-2017 19:29
<i>Surr: 4-Bromofluorobenzene</i>	112			73-126	%REC	50	23-May-2017 19:29
<i>Surr: Dibromofluoromethane</i>	96.7			71-128	%REC	50	23-May-2017 19:29
<i>Surr: Toluene-d8</i>	104			73-127	%REC	50	23-May-2017 19:29
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: SFE			
Gasoline Range Organics	1,300		7.3	37	mg/Kg-dry	500	24-May-2017 15:19
<i>Surr: 4-Bromofluorobenzene</i>	120			70-130	%REC	500	24-May-2017 15:19
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 23-May-2017		Analyst: GEY	
Acenaphthene	< 0.0056		0.0056	0.037	mg/Kg-dry	10	24-May-2017 15:44
Anthracene	0.21		0.0056	0.037	mg/Kg-dry	10	24-May-2017 15:44
Benz(a)anthracene	0.30		0.018	0.037	mg/Kg-dry	10	24-May-2017 15:44
Benzo(a)pyrene	< 0.011		0.011	0.037	mg/Kg-dry	10	24-May-2017 15:44
Benzo(b)fluoranthene	< 0.013		0.013	0.037	mg/Kg-dry	10	24-May-2017 15:44
Benzo(k)fluoranthene	< 0.010		0.010	0.037	mg/Kg-dry	10	24-May-2017 15:44
Chrysene	< 0.0090		0.0090	0.037	mg/Kg-dry	10	24-May-2017 15:44
Dibenz(a,h)anthracene	< 0.018		0.018	0.037	mg/Kg-dry	10	24-May-2017 15:44
Fluoranthene	< 0.012		0.012	0.037	mg/Kg-dry	10	24-May-2017 15:44
Fluorene	0.17		0.012	0.037	mg/Kg-dry	10	24-May-2017 15:44
Indeno(1,2,3-cd)pyrene	< 0.0090		0.0090	0.037	mg/Kg-dry	10	24-May-2017 15:44
Naphthalene	0.84		0.0067	0.037	mg/Kg-dry	10	24-May-2017 15:44
Pyrene	< 0.0067		0.0067	0.037	mg/Kg-dry	10	24-May-2017 15:44
<i>Surr: 2-Fluorobiphenyl</i>	82.4			43-125	%REC	10	24-May-2017 15:44
<i>Surr: 4-Terphenyl-d14</i>	87.2			32-125	%REC	10	24-May-2017 15:44
<i>Surr: Nitrobenzene-d5</i>	122			37-125	%REC	10	24-May-2017 15:44
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3541 / 23-May-2017		Analyst: AAP	
TPH (Diesel Range)	6,200		110	380	mg/Kg-dry	200	25-May-2017 23:47
TPH (Motor Oil Range)	8,600		110	760	mg/Kg-dry	200	25-May-2017 23:47
<i>Surr: 2-Fluorobiphenyl</i>	1750	S		60-135	%REC	200	25-May-2017 23:47
TRIVALENT CHROMIUM		Method:Calculation		Analyst: DQ			
Chromium, Trivalent	4.48	J	0.788	5.63	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO		Method:La29B SAR		Analyst: RPM			
Sodium Adsorption Ratio	17.4		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB06 (7-10)
 Collection Date: 18-May-2017 11:30

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-06
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	21.7		5.00	5.00	mg/L	10	30-May-2017 13:56
Magnesium	6.36		5.00	5.00	mg/L	10	30-May-2017 13:56
Sodium	358		5.00	5.00	mg/L	10	30-May-2017 13:56
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	35.6		25.0	25.0	mg/Kg	1	01-Jun-2017 12:04
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 25-May-2017		Analyst: JDE	
Arsenic	2.28		0.107	0.537	mg/Kg-dry	1	25-May-2017 18:26
Boron	4.97		1.50	2.68	mg/Kg-dry	1	25-May-2017 18:26
Cadmium	0.101	J	0.0537	0.537	mg/Kg-dry	1	25-May-2017 18:26
Chromium	4.48		0.0966	0.537	mg/Kg-dry	1	25-May-2017 18:26
Copper	5.34		0.107	0.215	mg/Kg-dry	1	25-May-2017 18:26
Lead	5.10		0.0537	0.537	mg/Kg-dry	1	25-May-2017 18:26
Nickel	6.07		0.0966	0.537	mg/Kg-dry	1	25-May-2017 18:26
Selenium	0.589		0.193	0.537	mg/Kg-dry	1	25-May-2017 18:26
Silver	< 0.0858		0.0858	0.537	mg/Kg-dry	1	25-May-2017 18:26
Zinc	24.4		0.268	0.537	mg/Kg-dry	1	25-May-2017 18:26
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 25-May-2017		Analyst: JC	
Mercury	0.00767		0.000563	0.00398	mg/Kg-dry	1	25-May-2017 14:47
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JBA	
Percent Moisture	11.2		0.0100	0.0100	wt%	1	26-May-2017 10:42
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	1.98		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.338		0.338	2.25	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	8.99	H	0.100	0.100	pH Units	1	25-May-2017 13:30
Temp Deg C @pH	21.6	H	0	0	°C	1	25-May-2017 13:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB05 (8-10)
 Collection Date: 18-May-2017 10:00

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-07
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
VOLATILES BY SW8260C		Method:SW8260		Analyst: WLR			
Benzene	11		0.14	1.4	mg/Kg-dry	200	23-May-2017 20:17
Ethylbenzene	8.3		0.19	1.4	mg/Kg-dry	200	23-May-2017 20:17
Toluene	< 0.16		0.16	1.4	mg/Kg-dry	200	23-May-2017 20:17
Xylenes, Total	70		0.27	1.4	mg/Kg-dry	200	23-May-2017 20:17
Surr: 1,2-Dichloroethane-d4	102			70-128	%REC	200	23-May-2017 20:17
Surr: 4-Bromofluorobenzene	101			73-126	%REC	200	23-May-2017 20:17
Surr: Dibromofluoromethane	97.4			71-128	%REC	200	23-May-2017 20:17
Surr: Toluene-d8	102			73-127	%REC	200	23-May-2017 20:17
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: SFE			
Gasoline Range Organics	2,200		1.4	7.2	mg/Kg-dry	100	24-May-2017 12:53
Surr: 4-Bromofluorobenzene	91.5			70-130	%REC	100	24-May-2017 12:53
LOW-LEVEL SEMIVOLATILES BY 8270D		Method:SW8270		Prep:SW3541 / 23-May-2017		Analyst: GEY	
Acenaphthene	0.14		0.0063	0.041	mg/Kg-dry	10	24-May-2017 16:22
Anthracene	0.27		0.0063	0.041	mg/Kg-dry	10	24-May-2017 16:22
Benz(a)anthracene	0.41		0.020	0.041	mg/Kg-dry	10	24-May-2017 16:22
Benzo(a)pyrene	< 0.013		0.013	0.041	mg/Kg-dry	10	24-May-2017 16:22
Benzo(b)fluoranthene	< 0.015		0.015	0.041	mg/Kg-dry	10	24-May-2017 16:22
Benzo(k)fluoranthene	< 0.011		0.011	0.041	mg/Kg-dry	10	24-May-2017 16:22
Chrysene	0.18		0.010	0.041	mg/Kg-dry	10	24-May-2017 16:22
Dibenz(a,h)anthracene	< 0.020		0.020	0.041	mg/Kg-dry	10	24-May-2017 16:22
Fluoranthene	0.11		0.014	0.041	mg/Kg-dry	10	24-May-2017 16:22
Fluorene	0.19		0.014	0.041	mg/Kg-dry	10	24-May-2017 16:22
Indeno(1,2,3-cd)pyrene	< 0.010		0.010	0.041	mg/Kg-dry	10	24-May-2017 16:22
Naphthalene	0.0080	J	0.0075	0.041	mg/Kg-dry	10	24-May-2017 16:22
Pyrene	0.11		0.0075	0.041	mg/Kg-dry	10	24-May-2017 16:22
Surr: 2-Fluorobiphenyl	66.3			43-125	%REC	10	24-May-2017 16:22
Surr: 4-Terphenyl-d14	86.1			32-125	%REC	10	24-May-2017 16:22
Surr: Nitrobenzene-d5	64.0			37-125	%REC	10	24-May-2017 16:22
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3541 / 23-May-2017		Analyst: AAP	
TPH (Diesel Range)	15,000		630	2100	mg/Kg-dry	1000	26-May-2017 01:00
TPH (Motor Oil Range)	28,000		630	4300	mg/Kg-dry	1000	26-May-2017 01:00
Surr: 2-Fluorobiphenyl	3330	S		60-135	%REC	1000	26-May-2017 01:00
TRIVALENT CHROMIUM		Method:Calculation		Analyst: DQ			
Chromium, Trivalent	8.98		0.882	6.30	mg/Kg-dry	1	31-May-2017 11:17
LA29B SODIUM ADSORPTION RATIO		Method:La29B SAR		Analyst: RPM			
Sodium Adsorption Ratio	19.0		0.0100	0.0100	meq/meq	1	01-Jun-2017 14:20

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 Sample ID: SB05 (8-10)
 Collection Date: 18-May-2017 10:00

ANALYTICAL REPORT

WorkOrder:HS17051096
 Lab ID:HS17051096-07
 Matrix:Soil

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LA 29B - 1:1 SOLUBLE CATIONS FOR SAR		Method:La29B-6020		Prep:La29B-6020 / 24-May-2017		Analyst: RPM	
Calcium	196		4.99	4.99	mg/L	10	30-May-2017 13:59
Magnesium	114		4.99	4.99	mg/L	10	30-May-2017 13:59
Sodium	1,350		4.99	4.99	mg/L	10	30-May-2017 13:59
LA29B TOTAL TRUE BARIUM		Method:LADNR Ba		Prep:LADNR Ba / 31-May-2017		Analyst: RPM	
Barium, Total	154		25.0	25.0	mg/Kg	1	01-Jun-2017 12:07
METALS BY SW6020A		Method:SW6020		Prep:SW3050A / 25-May-2017		Analyst: JDE	
Arsenic	7.07		0.120	0.600	mg/Kg-dry	1	25-May-2017 18:39
Boron	14.4		1.68	3.00	mg/Kg-dry	1	25-May-2017 18:39
Cadmium	0.294	J	0.0600	0.600	mg/Kg-dry	1	25-May-2017 18:39
Chromium	8.98		0.108	0.600	mg/Kg-dry	1	25-May-2017 18:39
Copper	11.6		0.120	0.240	mg/Kg-dry	1	25-May-2017 18:39
Lead	14.3		0.0600	0.600	mg/Kg-dry	1	25-May-2017 18:39
Nickel	12.9		0.108	0.600	mg/Kg-dry	1	25-May-2017 18:39
Selenium	0.989		0.216	0.600	mg/Kg-dry	1	25-May-2017 18:39
Silver	< 0.0960		0.0960	0.600	mg/Kg-dry	1	25-May-2017 18:39
Zinc	56.1		0.300	0.600	mg/Kg-dry	1	25-May-2017 18:39
MERCURY BY SW7471B		Method:SW7471A		Prep:SW7471A / 25-May-2017		Analyst: JC	
Mercury	0.0306		0.000603	0.00426	mg/Kg-dry	1	25-May-2017 14:56
MOISTURE - ASTM D2216		Method:ASTM D2216				Analyst: JBA	
Percent Moisture	20.6		0.0100	0.0100	wt%	1	26-May-2017 10:42
LA29B ELECTRICAL CONDUCTIVITY		Method:LaDNR-29B EC				Analyst: KMU	
Electrical Conductivity, 1:1 aqueous	8.98		0.0100	0.0100	mmhos/cm @25°C	1	30-May-2017 15:15
HEXAVALENT CHROMIUM BY SW7196A		Method:SW7196		Prep:SW3060A / 26-May-2017		Analyst: JHD	
Chromium, Hexavalent	< 0.375		0.375	2.50	mg/kg-dry	1	26-May-2017 15:22
PH SOIL BY SW9045D		Method:SW9045B				Analyst: SAP	
pH	7.96	H	0.100	0.100	pH Units	1	25-May-2017 13:30
Temp Deg C @pH	21.7	H	0	0	°C	1	25-May-2017 13:30

Note: See Qualifiers Page for a list of qualifiers and their explanation.

WEIGHT LOG

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051096

Batch ID: 1694 **Method:** VOLATILES BY SW8260C

SampleID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS17051096-01	3	4.608 (g)	5 (mL)	1.09	TerraCore (5035A)
HS17051096-02	1	4.852 (g)	5 (mL)	1.03	TerraCore (5035A)
HS17051096-03	3	4.076 (g)	5 (mL)	1.23	TerraCore (5035A)
HS17051096-04	1	5.769 (g)	5 (mL)	0.87	TerraCore (5035A)
HS17051096-05	3	4.003 (g)	5 (mL)	1.25	TerraCore (5035A)
HS17051096-06	3	4.769 (g)	5 (mL)	1.05	TerraCore (5035A)
HS17051096-07	3	4.633 (g)	5 (mL)	1.08	TerraCore (5035A)

Batch ID: 1695 **Method:** GASOLINE RANGE ORGANICS BY SW8015C **Prep:**

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS17051096-02	1	5.26 (g)	5 (mL)	0.95	TerraCore (5035A)

Batch ID: 1698 **Method:** GASOLINE RANGE ORGANICS BY SW8015C **Prep:**

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS17051096-01	3	3.65 (g)	5 (mL)	1.37	TerraCore (5035A)
HS17051096-03	3	3.58 (g)	5 (mL)	1.4	TerraCore (5035A)
HS17051096-05	3	3.12 (g)	5 (mL)	1.6	TerraCore (5035A)
HS17051096-06	3	3.85 (g)	5 (mL)	1.3	TerraCore (5035A)
HS17051096-07	3	4.39 (g)	5 (mL)	1.14	TerraCore (5035A)

Batch ID: 1701 **Method:** GASOLINE RANGE ORGANICS BY SW8015C **Prep:**

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS17051096-04	3	6.64 (g)	5 (mL)	0.75	TerraCore (5035A)

Batch ID: 116371 **Method:** TPH DRO/ORO BY SW8015C **Prep:** 8015SPR_LL

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS17051096-01	1	30.06	1 (mL)	0.03327	
HS17051096-02	1	30.07	1 (mL)	0.03326	
HS17051096-03	1	30.03	1 (mL)	0.0333	
HS17051096-04	1	30.09	1 (mL)	0.03323	
HS17051096-05	1	30.05	3 (mL)	0.09983	
HS17051096-06	1	30.07	1 (mL)	0.03326	
HS17051096-07	1	30.01	1 (mL)	0.03332	

WEIGHT LOG

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051096

Batch ID: 116477 **Method:** LOW-LEVEL SEMIVOLATILES BY 8270D **Prep:** 3541_B_LOW

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17051096-01	1	30.09	1 (mL)	0.03323
HS17051096-02	1	30.08	1 (mL)	0.03324
HS17051096-03	1	30.06	1 (mL)	0.03327
HS17051096-04	1	30.05	1 (mL)	0.03328
HS17051096-05	1	30.01	3 (mL)	0.09997
HS17051096-06	1	30.07	1 (mL)	0.03326
HS17051096-07	1	30.09	1 (mL)	0.03323

Batch ID: 116548 **Method:** MERCURY BY SW7471B **Prep:** HG_S_LOWPR

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17051096-01	1	0.5584	40 (mL)	71.63
HS17051096-02	1	0.5593	40 (mL)	71.52
HS17051096-03	1	0.5761	40 (mL)	69.43
HS17051096-04	1	0.5862	40 (mL)	68.24
HS17051096-05	1	0.5616	40 (mL)	71.23
HS17051096-06	1	0.564	40 (mL)	70.92
HS17051096-07	1	0.5892	40 (mL)	67.89

Batch ID: 116556 **Method:** METALS BY SW6020A **Prep:** 3050_I_LOW

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17051096-01	1	0.5434	50 (mL)	92.01
HS17051096-02	1	0.5271	50 (mL)	94.86
HS17051096-03	1	0.5481	50 (mL)	91.22
HS17051096-04	1	0.5337	50 (mL)	93.69
HS17051096-05	1	0.5304	50 (mL)	94.27
HS17051096-06	1	0.5247	50 (mL)	95.29
HS17051096-07	1	0.5247	50 (mL)	95.29

Batch ID: 116607 **Method:** HEXAVALENT CHROMIUM BY SW7196A **Prep:** CR6_S_PR3060A

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17051096-01	1	2.5365	100 (mL)	39.42
HS17051096-02	1	2.4811	100 (mL)	40.3
HS17051096-03	1	2.5547	100 (mL)	39.14
HS17051096-04	1	2.4866	100 (mL)	40.22
HS17051096-05	1	2.5309	100 (mL)	39.51
HS17051096-06	1	2.5018	100 (mL)	39.97
HS17051096-07	1	2.5181	100 (mL)	39.71

WEIGHT LOG

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051096

Batch ID: 116712 **Method:** LA29B TOTAL TRUE BARIUM **Prep:** LADNR BAPR

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17051096-01	1	0.0102	50 (mL)	4902
HS17051096-02	1	0.0101	50 (mL)	4950
HS17051096-03	1	0.0103	50 (mL)	4854
HS17051096-04	1	0.0102	50 (mL)	4902
HS17051096-05	1	0.01	50 (mL)	5000
HS17051096-06	1	0.0103	50 (mL)	4854
HS17051096-07	1	0.0104	50 (mL)	4808

Batch ID: 116767 **Method:** LA 29B - 1:1 SOLUBLE CATIONS FOR SAR **Prep:** LA29B SAR CATPR

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS17051096-01	1	100.036	100 (mL)	0.9996
HS17051096-02	1	100.065	100 (mL)	0.9994
HS17051096-03	1	100.0035	100 (mL)	1
HS17051096-04	1	100.059	100 (mL)	0.9994
HS17051096-05	1	100.011	100 (mL)	0.9999
HS17051096-06	1	100.007	100 (mL)	0.9999
HS17051096-07	1	90.092	90 (mL)	0.999

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051096

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 116371 Test Name : TPH DRO/ORO BY SW8015C Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05		23 May 2017 15:17	25 May 2017 19:43	200
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00		23 May 2017 15:17	25 May 2017 20:32	20
HS17051096-03	SB05 (11-13)	18 May 2017 10:15		23 May 2017 15:17	25 May 2017 21:20	20
HS17051096-04	SB05 (18-20)	18 May 2017 10:40		23 May 2017 15:17	25 May 2017 16:27	1
HS17051096-05	SB06 (4-5)	18 May 2017 11:10		23 May 2017 15:17	25 May 2017 22:58	500
HS17051096-06	SB06 (7-10)	18 May 2017 11:30		23 May 2017 15:17	25 May 2017 23:47	200
HS17051096-07	SB05 (8-10)	18 May 2017 10:00		23 May 2017 15:17	26 May 2017 01:00	1000
Batch ID 116477 Test Name : LOW-LEVEL SEMIVOLATILES BY 8270D Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05		23 May 2017 13:09	24 May 2017 14:32	10
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00		23 May 2017 13:09	24 May 2017 14:51	10
HS17051096-03	SB05 (11-13)	18 May 2017 10:15		23 May 2017 13:09	24 May 2017 15:10	10
HS17051096-04	SB05 (18-20)	18 May 2017 10:40		23 May 2017 13:09	24 May 2017 11:16	1
HS17051096-05	SB06 (4-5)	18 May 2017 11:10		23 May 2017 13:09	24 May 2017 16:03	10
HS17051096-06	SB06 (7-10)	18 May 2017 11:30		23 May 2017 13:09	24 May 2017 15:44	10
HS17051096-07	SB05 (8-10)	18 May 2017 10:00		23 May 2017 13:09	24 May 2017 16:22	10
Batch ID 116548 Test Name : MERCURY BY SW7471B Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05		25 May 2017 08:50	25 May 2017 14:38	1
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00		25 May 2017 08:50	25 May 2017 14:40	1
HS17051096-03	SB05 (11-13)	18 May 2017 10:15		25 May 2017 08:50	25 May 2017 14:42	1
HS17051096-04	SB05 (18-20)	18 May 2017 10:40		25 May 2017 08:50	25 May 2017 14:43	1
HS17051096-05	SB06 (4-5)	18 May 2017 11:10		25 May 2017 08:50	25 May 2017 14:45	1
HS17051096-06	SB06 (7-10)	18 May 2017 11:30		25 May 2017 08:50	25 May 2017 14:47	1
HS17051096-07	SB05 (8-10)	18 May 2017 10:00		25 May 2017 08:50	25 May 2017 14:56	1
Batch ID 116556 Test Name : METALS BY SW6020A Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05		25 May 2017 10:28	25 May 2017 18:04	1
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00		25 May 2017 10:28	25 May 2017 18:09	1
HS17051096-03	SB05 (11-13)	18 May 2017 10:15		25 May 2017 10:28	25 May 2017 18:13	1
HS17051096-04	SB05 (18-20)	18 May 2017 10:40		25 May 2017 10:28	25 May 2017 18:17	1
HS17051096-05	SB06 (4-5)	18 May 2017 11:10		25 May 2017 10:28	25 May 2017 18:22	1
HS17051096-06	SB06 (7-10)	18 May 2017 11:30		25 May 2017 10:28	25 May 2017 18:26	1
HS17051096-07	SB05 (8-10)	18 May 2017 10:00		25 May 2017 10:28	25 May 2017 18:39	1
Batch ID 116607 Test Name : HEXAVALENT CHROMIUM BY SW7196A Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05		26 May 2017 11:02	26 May 2017 15:22	1
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00		26 May 2017 11:02	26 May 2017 15:22	1
HS17051096-03	SB05 (11-13)	18 May 2017 10:15		26 May 2017 11:02	26 May 2017 15:22	1
HS17051096-04	SB05 (18-20)	18 May 2017 10:40		26 May 2017 11:02	26 May 2017 15:22	1
HS17051096-05	SB06 (4-5)	18 May 2017 11:10		26 May 2017 11:02	26 May 2017 15:22	1
HS17051096-06	SB06 (7-10)	18 May 2017 11:30		26 May 2017 11:02	26 May 2017 15:22	1
HS17051096-07	SB05 (8-10)	18 May 2017 10:00		26 May 2017 11:02	26 May 2017 15:22	1

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051096

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID 116712 Test Name : LA29B TOTAL TRUE BARIUM Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05		31 May 2017 09:20	01 Jun 2017 11:43	1
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00		31 May 2017 09:20	01 Jun 2017 11:46	1
HS17051096-03	SB05 (11-13)	18 May 2017 10:15		31 May 2017 09:20	01 Jun 2017 11:49	1
HS17051096-04	SB05 (18-20)	18 May 2017 10:40		31 May 2017 09:20	01 Jun 2017 11:52	1
HS17051096-05	SB06 (4-5)	18 May 2017 11:10		31 May 2017 09:20	01 Jun 2017 12:01	1
HS17051096-06	SB06 (7-10)	18 May 2017 11:30		31 May 2017 09:20	01 Jun 2017 12:04	1
HS17051096-07	SB05 (8-10)	18 May 2017 10:00		31 May 2017 09:20	01 Jun 2017 12:07	1
Batch ID 116767 Test Name : LA 29B - 1:1 SOLUBLE CATIONS FOR SAR Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05		24 May 2017 16:00	30 May 2017 13:35	10
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00		24 May 2017 16:00	30 May 2017 13:38	10
HS17051096-03	SB05 (11-13)	18 May 2017 10:15		24 May 2017 16:00	30 May 2017 13:47	10
HS17051096-04	SB05 (18-20)	18 May 2017 10:40		24 May 2017 16:00	30 May 2017 13:50	10
HS17051096-05	SB06 (4-5)	18 May 2017 11:10		24 May 2017 16:00	30 May 2017 13:53	10
HS17051096-06	SB06 (7-10)	18 May 2017 11:30		24 May 2017 16:00	30 May 2017 13:56	10
HS17051096-07	SB05 (8-10)	18 May 2017 10:00		24 May 2017 16:00	30 May 2017 13:59	10
Batch ID R295155 Test Name : VOLATILES BY SW8260C Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05			23 May 2017 18:41	50
HS17051096-03	SB05 (11-13)	18 May 2017 10:15			23 May 2017 19:53	100
HS17051096-05	SB06 (4-5)	18 May 2017 11:10			23 May 2017 19:05	50
HS17051096-06	SB06 (7-10)	18 May 2017 11:30			23 May 2017 19:29	50
HS17051096-07	SB05 (8-10)	18 May 2017 10:00			23 May 2017 20:17	200
Batch ID R295209 Test Name : GASOLINE RANGE ORGANICS BY SW8015C Matrix: Soil						
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00			23 May 2017 18:17	1
Batch ID R295272 Test Name : VOLATILES BY SW8260C Matrix: Soil						
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00			24 May 2017 21:24	1
HS17051096-04	SB05 (18-20)	18 May 2017 10:40			24 May 2017 21:47	1
Batch ID R295282 Test Name : GASOLINE RANGE ORGANICS BY SW8015C Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05			24 May 2017 15:03	500
HS17051096-03	SB05 (11-13)	18 May 2017 10:15			24 May 2017 12:06	100
HS17051096-05	SB06 (4-5)	18 May 2017 11:10			24 May 2017 12:22	100
HS17051096-06	SB06 (7-10)	18 May 2017 11:30			24 May 2017 15:19	500
HS17051096-07	SB05 (8-10)	18 May 2017 10:00			24 May 2017 12:53	100

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID R295311 Test Name : PH SOIL BY SW9045D Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05			25 May 2017 13:30	1
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00			25 May 2017 13:30	1
HS17051096-03	SB05 (11-13)	18 May 2017 10:15			25 May 2017 13:30	1
HS17051096-04	SB05 (18-20)	18 May 2017 10:40			25 May 2017 13:30	1
HS17051096-05	SB06 (4-5)	18 May 2017 11:10			25 May 2017 13:30	1
HS17051096-06	SB06 (7-10)	18 May 2017 11:30			25 May 2017 13:30	1
HS17051096-07	SB05 (8-10)	18 May 2017 10:00			25 May 2017 13:30	1
Batch ID R295357 Test Name : GASOLINE RANGE ORGANICS BY SW8015C Matrix: Soil						
HS17051096-04	SB05 (18-20)	18 May 2017 10:40			25 May 2017 15:33	1
Batch ID R295393 Test Name : MOISTURE - ASTM D2216 Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05			26 May 2017 10:42	1
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00			26 May 2017 10:42	1
HS17051096-03	SB05 (11-13)	18 May 2017 10:15			26 May 2017 10:42	1
HS17051096-04	SB05 (18-20)	18 May 2017 10:40			26 May 2017 10:42	1
HS17051096-05	SB06 (4-5)	18 May 2017 11:10			26 May 2017 10:42	1
HS17051096-06	SB06 (7-10)	18 May 2017 11:30			26 May 2017 10:42	1
HS17051096-07	SB05 (8-10)	18 May 2017 10:00			26 May 2017 10:42	1
Batch ID R295527 Test Name : TRIVALENT CHROMIUM Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05			31 May 2017 11:17	1
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00			31 May 2017 11:17	1
HS17051096-03	SB05 (11-13)	18 May 2017 10:15			31 May 2017 11:17	1
HS17051096-04	SB05 (18-20)	18 May 2017 10:40			31 May 2017 11:17	1
HS17051096-05	SB06 (4-5)	18 May 2017 11:10			31 May 2017 11:17	1
HS17051096-06	SB06 (7-10)	18 May 2017 11:30			31 May 2017 11:17	1
HS17051096-07	SB05 (8-10)	18 May 2017 10:00			31 May 2017 11:17	1
Batch ID R295544 Test Name : LA29B ELECTRICAL CONDUCTIVITY Matrix: Soil						
HS17051096-01	SB03 (9-11)	17 May 2017 14:05			30 May 2017 15:15	1
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00			30 May 2017 15:15	1
HS17051096-03	SB05 (11-13)	18 May 2017 10:15			30 May 2017 15:15	1
HS17051096-04	SB05 (18-20)	18 May 2017 10:40			30 May 2017 15:15	1
HS17051096-05	SB06 (4-5)	18 May 2017 11:10			30 May 2017 15:15	1
HS17051096-06	SB06 (7-10)	18 May 2017 11:30			30 May 2017 15:15	1
HS17051096-07	SB05 (8-10)	18 May 2017 10:00			30 May 2017 15:15	1

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

DATES REPORT

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
Batch ID	R295643	Test Name : LA29B SODIUM ADSORPTION RATIO			Matrix: Soil	
HS17051096-01	SB03 (9-11)	17 May 2017 14:05			01 Jun 2017 14:20	1
HS17051096-02	SB05 (4-4.5)	18 May 2017 10:00			01 Jun 2017 14:20	1
HS17051096-03	SB05 (11-13)	18 May 2017 10:15			01 Jun 2017 14:20	1
HS17051096-04	SB05 (18-20)	18 May 2017 10:40			01 Jun 2017 14:20	1
HS17051096-05	SB06 (4-5)	18 May 2017 11:10			01 Jun 2017 14:20	1
HS17051096-06	SB06 (7-10)	18 May 2017 11:30			01 Jun 2017 14:20	1
HS17051096-07	SB05 (8-10)	18 May 2017 10:00			01 Jun 2017 14:20	1

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116371		Instrument: FID-7		Method: SW8015M					
MBLK	Sample ID: MBLK-116371	Units: mg/Kg		Analysis Date: 23-May-2017 19:32					
Client ID:	Run ID: FID-8_295348	SeqNo: 4101394		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	< 0.50	1.7							
<i>Surr: 2-Fluorobiphenyl</i>	2.075	0.10	3.33	0	62.3	60 - 135			
MBLK	Sample ID: MBLK-116371	Units: mg/Kg		Analysis Date: 23-May-2017 19:32					
Client ID:	Run ID: FID-7_295281	SeqNo: 4100028		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	< 0.50	1.7							
TPH (Motor Oil Range)	< 0.50	3.4							
<i>Surr: 2-Fluorobiphenyl</i>	2.075	0.10	3.33	0	62.3	60 - 135			
LCS	Sample ID: LCS-116371	Units: mg/Kg		Analysis Date: 23-May-2017 19:57					
Client ID:	Run ID: FID-8_295348	SeqNo: 4101395		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	31.25	1.7	33.33	0	93.8	70 - 130			
<i>Surr: 2-Fluorobiphenyl</i>	2.741	0.10	3.33	0	82.3	60 - 135			
LCS	Sample ID: LCS-116371	Units: mg/Kg		Analysis Date: 23-May-2017 19:57					
Client ID:	Run ID: FID-7_295281	SeqNo: 4100029		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	31.25	1.7	33.33	0	93.8	70 - 130			
TPH (Motor Oil Range)	26.96	3.4	33.33	0	80.9	70 - 130			
<i>Surr: 2-Fluorobiphenyl</i>	2.741	0.10	3.33	0	82.3	60 - 135			
MS	Sample ID: HS17051072-01MS	Units: mg/Kg		Analysis Date: 23-May-2017 20:45					
Client ID:	Run ID: FID-8_295348	SeqNo: 4101397		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	31.45	1.7	33.27	2.298	87.6	70 - 130			
<i>Surr: 2-Fluorobiphenyl</i>	2.425	0.10	3.324	0	73.0	60 - 135			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116371		Instrument: FID-7		Method: SW8015M					
MS	Sample ID: HS17051072-01MS	Units: mg/Kg		Analysis Date: 23-May-2017 20:45					
Client ID:	Run ID: FID-7_295281	SeqNo: 4100031		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
TPH (Diesel Range)	31.45	1.7	33.27	2.298	87.6	70 - 130			
TPH (Motor Oil Range)	46.22	3.4	33.27	19.07	81.6	70 - 130			
Surr: 2-Fluorobiphenyl	2.425	0.10	3.324	0	73.0	60 - 135			

MSD	Sample ID: HS17051072-01MSD	Units: mg/Kg		Analysis Date: 23-May-2017 21:10					
Client ID:	Run ID: FID-8_295348	SeqNo: 4101398		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
TPH (Diesel Range)	30.72	1.7	33.25	2.298	85.5	70 - 130	31.45	2.33	30
Surr: 2-Fluorobiphenyl	2.311	0.10	3.322	0	69.6	60 - 135	2.425	4.84	30

MSD	Sample ID: HS17051072-01MSD	Units: mg/Kg		Analysis Date: 23-May-2017 21:10					
Client ID:	Run ID: FID-7_295281	SeqNo: 4100032		PrepDate: 23-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
TPH (Diesel Range)	30.72	1.7	33.25	2.298	85.5	70 - 130	31.45	2.33	30
TPH (Motor Oil Range)	44.1	3.4	33.25	19.07	75.3	70 - 130	46.22	4.7	30
Surr: 2-Fluorobiphenyl	2.311	0.10	3.322	0	69.6	60 - 135	2.425	4.84	30

The following samples were analyzed in this batch:

HS17051096-01	HS17051096-02	HS17051096-03	HS17051096-04
HS17051096-05	HS17051096-06	HS17051096-07	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: R295209		Instrument: FID-14		Method: SW8015						
MBLK	Sample ID: GBLK-170523	Units: mg/Kg			Analysis Date: 23-May-2017 12:45					
Client ID:	Run ID: FID-14_295209	SeqNo: 4098929		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics < 0.010 0.050

Surr: 4-Bromofluorobenzene 0.08264 0.0050 0.1 0 82.6 70 - 130

LCS	Sample ID: GLCS-170523	Units: mg/Kg				Analysis Date: 23-May-2017 12:13				
Client ID:		Run ID: FID-14_295209	SeqNo: 4098928		PrepDate:			DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics 1.085 0.050 1 0 109 70 - 130

Surr: 4-Bromofluorobenzene 0.08628 0.0050 0.1 0 86.3 70 - 130

MS	Sample ID: HS17051011-02MS		Units: mg/Kg		Analysis Date: 23-May-2017 16:56					
Client ID:	Run ID: FID-14_295209		SeqNo: 4098937		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics 1.167 0.050 1 0.05992 111 70 - 130

Surr: 4-Bromofluorobenzene 0.09098 0.0050 0.1 0 91.0 70 - 130

MSD										
Sample ID:		HS17051011-02MSD			Units: mg/Kg		Analysis Date: 23-May-2017 17:12			
Client ID:		Run ID:		FID-14_295209		SeqNo: 4098938		PrepDate:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics 1.101 0.050 1 0.05992 104 70 - 130 1.167 5.84 30

Surr: 4-Bromofluorobenzene 0.08942 0.0050 0.1 0 89.4 70 - 130 0.09098 1.72 30

The following samples were analyzed in this batch: HS17051096-02

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: R295282		Instrument: FID-14		Method: SW8015					
MBLK	Sample ID: GBLKM-170524	Units: mg/Kg		Analysis Date: 24-May-2017 11:28					
Client ID:	Run ID: FID-14_295282	SeqNo: 4100033		PrepDate:		DF: 50			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Gasoline Range Organics	< 0.50	2.5							
Surr: 4-Bromofluorobenzene	4.775	0.25	5	0	95.5	70 - 130			
LCS	Sample ID: GLCS-170524	Units: mg/L		Analysis Date: 24-May-2017 10:57					
Client ID:	Run ID: FID-14_295282	SeqNo: 4100022		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Gasoline Range Organics	0.9925	0.0500	1	0	99.2	70 - 130			
Surr: 4-Bromofluorobenzene	0.08652	0.00500	0.1	0	86.5	70 - 130			
MS	Sample ID: HS17051160-07MS	Units: mg/L		Analysis Date: 24-May-2017 14:16					
Client ID:	Run ID: FID-14_295282	SeqNo: 4100026		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Gasoline Range Organics	1.031	0.0500	1	0	103	70 - 130			
Surr: 4-Bromofluorobenzene	0.09033	0.00500	0.1	0	90.3	70 - 130			
MSD	Sample ID: HS17051160-07MSD	Units: mg/L		Analysis Date: 24-May-2017 14:31					
Client ID:	Run ID: FID-14_295282	SeqNo: 4100027		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Gasoline Range Organics	1.031	0.0500	1	0	103	70 - 130	1.031	0.0723	20
Surr: 4-Bromofluorobenzene	0.08825	0.00500	0.1	0	88.2	70 - 130	0.09033	2.33	20
The following samples were analyzed in this batch:									
<div> <div>HS17051096-01</div> <div>HS17051096-03</div> <div>HS17051096-05</div> <div>HS17051096-06</div> </div> <div> <div>HS17051096-07</div> </div>									

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: R295357		Instrument: FID-14		Method: SW8015					
MBLK	Sample ID: GBLK-170525	Units: mg/Kg		Analysis Date: 25-May-2017 12:02					
Client ID:	Run ID: FID-14_295357	SeqNo: 4101401		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Gasoline Range Organics < 0.010 0.050

Surr: 4-Bromofluorobenzene 0.09931 0.0050 0.1 0 99.3 70 - 130

LCS	Sample ID: GLCS-170525	Units: mg/Kg		Analysis Date: 25-May-2017 11:29					
Client ID:	Run ID: FID-14_295357	SeqNo: 4101400		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Gasoline Range Organics 1.142 0.050 1 0 114 70 - 130

Surr: 4-Bromofluorobenzene 0.09432 0.0050 0.1 0 94.3 70 - 130

MS	Sample ID: HS17051257-02MS	Units: mg/Kg		Analysis Date: 25-May-2017 15:01					
Client ID:	Run ID: FID-14_295357	SeqNo: 4101409		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Gasoline Range Organics 0.947 0.050 1 0 94.7 70 - 130

Surr: 4-Bromofluorobenzene 0.07043 0.0050 0.1 0 70.4 70 - 130

MSD	Sample ID: HS17051257-02MSD	Units: mg/Kg		Analysis Date: 25-May-2017 15:17					
Client ID:	Run ID: FID-14_295357	SeqNo: 4101410		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual

Gasoline Range Organics 0.9944 0.050 0.99 0 100 70 - 130 0.947 4.88 30

Surr: 4-Bromofluorobenzene 0.07041 0.0050 0.099 0 71.1 70 - 130 0.07043 0.0231 30

The following samples were analyzed in this batch: HS17051096-04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116548		Instrument: HG03		Method: SW7471A					
MBLK	Sample ID: MBLK-116548	Units: ug/Kg		Analysis Date: 25-May-2017 14:00					
Client ID:	Run ID: HG03_295317	SeqNo: 4100640		PrepDate: 25-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Mercury	< 0.480	3.40							
LCS	Sample ID: LCS-116548	Units: ug/Kg		Analysis Date: 25-May-2017 14:02					
Client ID:	Run ID: HG03_295317	SeqNo: 4100641		PrepDate: 25-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Mercury	349.3	3.39	339.8	0	103	85 - 115			
MS	Sample ID: HS17050750-01MS	Units: ug/Kg		Analysis Date: 25-May-2017 14:35					
Client ID:	Run ID: HG03_295317	SeqNo: 4100654		PrepDate: 25-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Mercury	390.2	3.53	354.1	11.15	107	85 - 115			
MSD	Sample ID: HS17050750-01MSD	Units: ug/Kg		Analysis Date: 25-May-2017 14:37					
Client ID:	Run ID: HG03_295317	SeqNo: 4100655		PrepDate: 25-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Mercury	385.2	3.56	356.7	11.15	105	85 - 115	390.2	1.29	20
The following samples were analyzed in this batch:									
HS17051096-01		HS17051096-02		HS17051096-03		HS17051096-04			
HS17051096-05		HS17051096-06		HS17051096-07					

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116556		Instrument: ICPMS04		Method: SW6020						
MBLK	Sample ID: MBLK-116556	Units: mg/Kg			Analysis Date: 25-May-2017 17:55					
Client ID:		Run ID: ICPMS04_295320	SeqNo: 4100908		PrepDate: 25-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	< 0.100	0.500								
Boron	< 1.40	2.50								
Cadmium	< 0.0500	0.500								
Chromium	< 0.0900	0.500								
Copper	< 0.100	0.200								
Lead	< 0.0500	0.500								
Nickel	< 0.0900	0.500								
Selenium	< 0.180	0.500								
Silver	< 0.0800	0.500								
Zinc	< 0.250	0.500								

LCS	Sample ID: LCS-116556	Units: mg/Kg			Analysis Date: 25-May-2017 18:00					
Client ID:		Run ID: ICPMS04_295320	SeqNo: 4100909		PrepDate: 25-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.258	0.500	10	0	92.6	80 - 120				
Boron	49.8	2.50	50	0	99.6	80 - 120				
Cadmium	9.306	0.500	10	0	93.1	80 - 120				
Chromium	9.417	0.500	10	0	94.2	80 - 120				
Copper	9.426	0.200	10	0	94.3	80 - 120				
Lead	8.99	0.500	10	0	89.9	80 - 120				
Nickel	9.424	0.500	10	0	94.2	80 - 120				
Selenium	9.161	0.500	10	0	91.6	80 - 120				
Silver	9.174	0.500	10	0	91.7	80 - 120				
Zinc	9.423	0.500	10	0	94.2	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116556		Instrument: ICPMS04		Method: SW6020						
MS		Sample ID: HS17051223-05MS		Units: mg/Kg		Analysis Date: 25-May-2017 19:38				
Client ID:		Run ID: ICPMS04_295320		SeqNo: 4100931		PrepDate: 25-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	8.602	0.459	9.173	0.2365	91.2	75 - 125				
Boron	45.82	2.29	45.86	0.236	99.4	75 - 125				
Cadmium	8.473	0.459	9.173	0.01616	92.2	75 - 125				
Chromium	9.711	0.459	9.173	0.7781	97.4	75 - 125				
Copper	9.176	0.183	9.173	0.61	93.4	75 - 125				
Lead	10.05	0.459	9.173	1.596	92.2	75 - 125				
Nickel	9.299	0.459	9.173	0.4916	96.0	75 - 125				
Selenium	8.012	0.459	9.173	0.06905	86.6	75 - 125				
Silver	8.431	0.459	9.173	0.005601	91.9	75 - 125				
Zinc	12.84	0.459	9.173	3.55	101	75 - 125				

MSD		Sample ID: HS17051223-05MSD		Units: mg/Kg		Analysis Date: 25-May-2017 19:42				
Client ID:		Run ID: ICPMS04_295320		SeqNo: 4100932		PrepDate: 25-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	8.596	0.459	9.176	0.2365	91.1	75 - 125	8.602	0.0668	20	
Boron	46.69	2.29	45.88	0.236	101	75 - 125	45.82	1.87	20	
Cadmium	8.408	0.459	9.176	0.01616	91.5	75 - 125	8.473	0.77	20	
Chromium	9.584	0.459	9.176	0.7781	96.0	75 - 125	9.711	1.32	20	
Copper	9.167	0.184	9.176	0.61	93.3	75 - 125	9.176	0.1	20	
Lead	9.991	0.459	9.176	1.596	91.5	75 - 125	10.05	0.6	20	
Nickel	9.23	0.459	9.176	0.4916	95.2	75 - 125	9.299	0.742	20	
Selenium	7.791	0.459	9.176	0.06905	84.2	75 - 125	8.012	2.8	20	
Silver	8.465	0.459	9.176	0.005601	92.2	75 - 125	8.431	0.395	20	
Zinc	12.76	0.459	9.176	3.55	100	75 - 125	12.84	0.669	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

QC BATCH REPORT

Batch ID: 116556		Instrument: ICPMS04		Method: SW6020					
PDS	Sample ID: HS17051223-05PDS	Units: mg/Kg			Analysis Date: 25-May-2017 19:46				
Client ID:	Run ID: ICPMS04_295320	SeqNo: 4100933		PrepDate: 25-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qua
Arsenic	8.437	0.459	9.183	0.2365	89.3	75 - 125			
Boron	114.5	2.30	91.83	0.236	124	75 - 125			
Cadmium	8.341	0.459	9.183	0.01616	90.7	75 - 125			
Chromium	8.936	0.459	9.183	0.7781	88.8	75 - 125			
Copper	8.859	0.184	9.183	0.61	89.8	75 - 125			
Lead	9.763	0.459	9.183	1.596	88.9	75 - 125			
Nickel	8.771	0.459	9.183	0.4916	90.2	75 - 125			
Selenium	8.136	0.459	9.183	0.06905	87.9	75 - 125			
Silver	8.205	0.459	9.183	0.005601	89.3	75 - 125			
Zinc	11.62	0.459	9.183	3.55	87.9	75 - 125			
SD	Sample ID: HS17051223-05SD	Units: mg/Kg			Analysis Date: 25-May-2017 19:33				
Client ID:	Run ID: ICPMS04_295320	SeqNo: 4100930		PrepDate: 25-May-2017		DF: 5			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit Qual
Arsenic	< 0.459	2.30					0.2365	0	10
Boron	< 6.43	11.5					0.236	0	10
Cadmium	< 0.230	2.30					0.01616	0	10
Chromium	0.7482	2.30					0.7781	0	10
Copper	0.6052	0.918					0.61	0	10
Lead	1.627	2.30					1.596	0	10
Nickel	0.4797	2.30					0.4916	0	10
Selenium	< 0.826	2.30					0.06905	0	10
Silver	< 0.367	2.30					0.005601	0	10
Zinc	3.634	2.30					3.55	2.35	10
The following samples were analyzed in this batch:		HS17051096-01 HS17051096-05	HS17051096-02 HS17051096-06	HS17051096-03 HS17051096-07	HS17051096-04				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116712		Instrument: ICPMS05		Method: LADNR Ba						
MS	Sample ID: HS17051011-02MS	Units: mg/Kg		Analysis Date: 01-Jun-2017 11:17						
Client ID:	Run ID: ICPMS05_295620	SeqNo: 4107517		PrepDate: 31-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit Qual		
Barium, Total	213.1	25.0	200	27.85	92.6	75 - 125				
MSD	Sample ID: HS17051011-02MSD	Units: mg/Kg		Analysis Date: 01-Jun-2017 11:26						
Client ID:	Run ID: ICPMS05_295620	SeqNo: 4107520		PrepDate: 31-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD Limit Qual		
Barium, Total	198	25.0	200	27.85	85.1	75 - 125	213.1	7.34	30	
SD	Sample ID: HS17051011-02SD	Units: mg/Kg		Analysis Date: 01-Jun-2017 11:14						
Client ID:	Run ID: ICPMS05_295620	SeqNo: 4107516		PrepDate: 31-May-2017		DF: 5				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D Limit Qual		
Barium, Total	< 125	125					27.85	0	10	
The following samples were analyzed in this batch:										
HS17051096-01		HS17051096-02		HS17051096-03		HS17051096-04				
HS17051096-05		HS17051096-06		HS17051096-07						

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116767		Instrument: ICPMS05		Method: La29B-6020						
MBLK	Sample ID: MBLK-116767	Units: mg/L			Analysis Date: 30-May-2017 13:32					
Client ID:		Run ID: ICPMS05_295427	SeqNo: 4104267		PrepDate: 24-May-2017		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	< 0.500	0.500								
Magnesium	< 0.500	0.500								
Sodium	< 0.500	0.500								

DUP	Sample ID: HS17051096-07DUP	Units: mg/L			Analysis Date: 30-May-2017 14:02					
Client ID: SB05 (8-10)		Run ID: ICPMS05_295427	SeqNo: 4104277		PrepDate: 24-May-2017		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	152	5.00					196	25.3	30	
Magnesium	93.66	5.00					113.5	19.2	30	
Sodium	1195	5.00					1350	12.2	30	

The following samples were analyzed in this batch:	HS17051096-01	HS17051096-02	HS17051096-03	HS17051096-04
	HS17051096-05	HS17051096-06	HS17051096-07	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: R295643		Instrument: MISC-Metals		Method: La29B SAR					
DUP	Sample ID: HS17051096-07DUP	Units: meq/meq		Analysis Date: 01-Jun-2017 14:20					
Client ID: SB05 (8-10)	Run ID: MISC-Metals_295643		SeqNo: 4107679		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Sodium Adsorption Ratio	18.88	0.0100					18.97	0.513	30

The following samples were analyzed in this batch:

HS17051096-01	HS17051096-02	HS17051096-03	HS17051096-04
HS17051096-05	HS17051096-06	HS17051096-07	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116477		Instrument: SV-7		Method: SW8270						
MBLK	Sample ID: MBLK-116477	Units: ug/Kg		Analysis Date: 25-May-2017 16:11						
Client ID:	Run ID: SV-7_295327	SeqNo: 4100798		PrepDate: 23-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	< 0.50	3.3								
Anthracene	< 0.50	3.3								
Benz(a)anthracene	< 1.6	3.3								
Benzo(a)pyrene	< 1.0	3.3								
Benzo(b)fluoranthene	< 1.2	3.3								
Benzo(k)fluoranthene	< 0.90	3.3								
Chrysene	< 0.80	3.3								
Dibenz(a,h)anthracene	< 1.6	3.3								
Fluoranthene	< 1.1	3.3								
Fluorene	< 1.1	3.3								
Indeno(1,2,3-cd)pyrene	< 0.80	3.3								
Naphthalene	< 0.60	3.3								
Pyrene	< 0.60	3.3								
<i>Surr: 2-Fluorobiphenyl</i>	<i>133.9</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>80.2</i>	<i>43 - 125</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>128.3</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>76.8</i>	<i>32 - 125</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>134.4</i>	<i>0</i>	<i>167</i>	<i>0</i>	<i>80.5</i>	<i>37 - 125</i>				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116477		Instrument: SV-7		Method: SW8270						
LCS		Sample ID: LCS-116477		Units: ug/Kg		Analysis Date: 25-May-2017 16:31				
Client ID:		Run ID: SV-7_295327		SeqNo: 4100799		PrepDate: 23-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	121.9	3.3	167	0	73.0	50 - 120				
Anthracene	120.2	3.3	167	0	72.0	50 - 123				
Benz(a)anthracene	123.4	3.3	167	0	73.9	50 - 131				
Benzo(a)pyrene	118	3.3	167	0	70.7	50 - 130				
Benzo(b)fluoranthene	127.1	3.3	167	0	76.1	50 - 137				
Benzo(k)fluoranthene	118	3.3	167	0	70.6	50 - 143				
Chrysene	123.9	3.3	167	0	74.2	50 - 130				
Dibenz(a,h)anthracene	129.8	3.3	167	0	77.7	50 - 130				
Fluoranthene	122.9	3.3	167	0	73.6	50 - 131				
Fluorene	129.2	3.3	167	0	77.4	50 - 125				
Indeno(1,2,3-cd)pyrene	136.3	3.3	167	0	81.6	45 - 139				
Naphthalene	120	3.3	167	0	71.9	50 - 125				
Pyrene	124.6	3.3	167	0	74.6	45 - 130				
Surr: 2-Fluorobiphenyl	122.5	0	167	0	73.4	43 - 125				
Surr: 4-Terphenyl-d14	121.2	0	167	0	72.6	32 - 125				
Surr: Nitrobenzene-d5	122.4	0	167	0	73.3	37 - 125				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116477		Instrument: SV-7		Method: SW8270						
MS		Sample ID: HS17051094-03MS		Units: ug/Kg		Analysis Date: 25-May-2017 20:16				
Client ID:		Run ID: SV-7_295327		SeqNo: 4101363		PrepDate: 23-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	124.3	3.3	166.9	0	74.5	50 - 120				
Anthracene	135.9	3.3	166.9	0	81.4	50 - 123				
Benz(a)anthracene	126.4	3.3	166.9	3.457	73.7	50 - 131				
Benzo(a)pyrene	119	3.3	166.9	29.82	53.5	50 - 130				
Benzo(b)fluoranthene	129.1	3.3	166.9	25.8	61.9	50 - 137				
Benzo(k)fluoranthene	119.5	3.3	166.9	28.25	54.7	50 - 143				
Chrysene	135.8	3.3	166.9	4.367	78.7	50 - 130				
Dibenz(a,h)anthracene	136	3.3	166.9	55.69	48.1	50 - 130				S
Fluoranthene	120	3.3	166.9	0	71.9	50 - 131				
Fluorene	134.2	3.3	166.9	0	80.4	50 - 125				
Indeno(1,2,3-cd)pyrene	177.2	3.3	166.9	55.85	72.7	45 - 139				
Naphthalene	125.3	3.3	166.9	0	75.1	50 - 125				
Pyrene	123.6	3.3	166.9	0	74.0	45 - 130				
<i>Surr: 2-Fluorobiphenyl</i>	<i>120.6</i>	<i>0</i>	<i>166.9</i>	<i>0</i>	<i>72.2</i>	<i>43 - 125</i>				
<i>Surr: 4-Terphenyl-d14</i>	<i>124.1</i>	<i>0</i>	<i>166.9</i>	<i>0</i>	<i>74.4</i>	<i>32 - 125</i>				
<i>Surr: Nitrobenzene-d5</i>	<i>125.6</i>	<i>0</i>	<i>166.9</i>	<i>0</i>	<i>75.2</i>	<i>37 - 125</i>				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116477		Instrument: SV-7		Method: SW8270						
MSD		Sample ID: HS17051094-03MSD		Units: ug/Kg		Analysis Date: 26-May-2017 13:09				
Client ID:		Run ID: SV-7_295327		SeqNo: 4101741		PrepDate: 23-May-2017		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	125.1	3.3	166.7	0	75.1	50 - 120	124.3	0.629	30	
Anthracene	126.1	3.3	166.7	0	75.7	50 - 123	135.9	7.48	30	
Benz(a)anthracene	129	3.3	166.7	3.457	75.3	50 - 131	126.4	2.03	30	
Benzo(a)pyrene	119.7	3.3	166.7	29.82	53.9	50 - 130	119	0.567	30	
Benzo(b)fluoranthene	133.3	3.3	166.7	25.8	64.5	50 - 137	129.1	3.2	30	
Benzo(k)fluoranthene	115.4	3.3	166.7	28.25	52.3	50 - 143	119.5	3.52	30	
Chrysene	133.7	3.3	166.7	4.367	77.6	50 - 130	135.8	1.53	30	
Dibenz(a,h)anthracene	137.2	3.3	166.7	55.69	48.9	50 - 130	136	0.944	30	S
Fluoranthene	128.6	3.3	166.7	0	77.2	50 - 131	120	6.93	30	
Fluorene	134.9	3.3	166.7	0	80.9	50 - 125	134.2	0.488	30	
Indeno(1,2,3-cd)pyrene	143.5	3.3	166.7	55.85	52.6	45 - 139	177.2	21	30	
Naphthalene	124	3.3	166.7	0	74.4	50 - 125	125.3	1.08	30	
Pyrene	131.9	3.3	166.7	0	79.2	45 - 130	123.6	6.56	30	
Surr: 2-Fluorobiphenyl	122.8	0	166.7	0	73.7	43 - 125	120.6	1.83	30	
Surr: 4-Terphenyl-d14	123.2	0	166.7	0	73.9	32 - 125	124.1	0.787	30	
Surr: Nitrobenzene-d5	120.9	0	166.7	0	72.5	37 - 125	125.6	3.83	30	

The following samples were analyzed in this batch:

HS17051096-01	HS17051096-02	HS17051096-03	HS17051096-04
HS17051096-05	HS17051096-06	HS17051096-07	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: R295155		Instrument: VOA8		Method: SW8260					
MBLK	Sample ID: MBLKW1-052317	Units: ug/Kg		Analysis Date: 23-May-2017 13:11					
Client ID:	Run ID: VOA8_295155	SeqNo: 4097984		PrepDate:		DF: 50			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 25	250							
Ethylbenzene	< 35	250							
Toluene	< 30	250							
Xylenes, Total	< 50	250							
Surr: 1,2-Dichloroethane-d4	2466	0	2500	0	98.7	70 - 128			
Surr: 4-Bromofluorobenzene	2400	0	2500	0	96.0	73 - 126			
Surr: Dibromofluoromethane	2492	0	2500	0	99.7	71 - 128			
Surr: Toluene-d8	2525	0	2500	0	101	73 - 127			

LCS	Sample ID: VLCSW1-052317	Units: ug/Kg		Analysis Date: 23-May-2017 12:24					
Client ID:	Run ID: VOA8_295155	SeqNo: 4097983		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	47.62	5.0	50	0	95.2	79 - 122			
Ethylbenzene	48.92	5.0	50	0	97.8	80 - 122			
Toluene	48.15	5.0	50	0	96.3	79 - 120			
Xylenes, Total	148.1	5.0	150	0	98.7	79 - 123			
Surr: 1,2-Dichloroethane-d4	53.85	0	50	0	108	70 - 128			
Surr: 4-Bromofluorobenzene	49.49	0	50	0	99.0	73 - 126			
Surr: Dibromofluoromethane	50.13	0	50	0	100	71 - 128			
Surr: Toluene-d8	50.14	0	50	0	100	73 - 127			

MS	Sample ID: HS17051075-01MS	Units: ug/Kg		Analysis Date: 23-May-2017 15:28					
Client ID:	Run ID: VOA8_295155	SeqNo: 4098637		PrepDate:		DF: 50			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	2633	240	2425	0	109	79 - 122			
Ethylbenzene	1383	240	2425	0	57.0	80 - 122			S
Toluene	1877	240	2425	0	77.4	79 - 120			S
Xylenes, Total	3301	240	7275	0	45.4	79 - 123			S
Surr: 1,2-Dichloroethane-d4	2671	0	2425	0	110	70 - 128			
Surr: 4-Bromofluorobenzene	2134	0	2425	0	88.0	73 - 126			
Surr: Dibromofluoromethane	2474	0	2425	0	102	71 - 128			
Surr: Toluene-d8	2504	0	2425	0	103	73 - 127			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: R295155		Instrument: VOA8		Method: SW8260	
MSD		Sample ID: HS17051075-01MSD		Units: ug/Kg	
Client ID:		Run ID: VOA8_295155		SeqNo: 4098638	
Analyte		Result		SPK Ref Value	
		PQL		%REC	
		SPK Val		Control Limit	
				RPD Ref Value	
				%RPD	
				RPD Limit	
				Qual	
Benzene		2479		240	
Ethylbenzene		1206		240	
Toluene		1667		240	
Xylenes, Total		2876		240	
Surr: 1,2-Dichloroethane-d4		2347		0	
Surr: 4-Bromofluorobenzene		2171		0	
Surr: Dibromofluoromethane		2433		0	
Surr: Toluene-d8		2450		0	
The following samples were analyzed in this batch:		HS17051096-01		HS17051096-03	
		HS17051096-07		HS17051096-05	
				HS17051096-06	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: R295272		Instrument: VOA5		Method: SW8260					
MBLK	Sample ID: VBLKS1-052417	Units: ug/Kg		Analysis Date: 24-May-2017 20:38					
Client ID:	Run ID: VOA5_295272	SeqNo: 4099772		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	< 0.50	5.0							
Ethylbenzene	< 0.70	5.0							
Toluene	< 0.60	5.0							
Xylenes, Total	< 1.0	5.0							
Surr: 1,2-Dichloroethane-d4	45.73	0	50	0	91.5	70 - 128			
Surr: 4-Bromofluorobenzene	48.47	0	50	0	96.9	73 - 126			
Surr: Dibromofluoromethane	48.46	0	50	0	96.9	71 - 128			
Surr: Toluene-d8	51.06	0	50	0	102	73 - 127			

LCS	Sample ID: VLCSS1-052417	Units: ug/Kg		Analysis Date: 24-May-2017 19:51					
Client ID:	Run ID: VOA5_295272	SeqNo: 4099771		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	52.61	5.0	50	0	105	79 - 122			
Ethylbenzene	50.62	5.0	50	0	101	80 - 122			
Toluene	50.41	5.0	50	0	101	79 - 120			
Xylenes, Total	153.3	5.0	150	0	102	79 - 123			
Surr: 1,2-Dichloroethane-d4	51.24	0	50	0	102	70 - 128			
Surr: 4-Bromofluorobenzene	50.84	0	50	0	102	73 - 126			
Surr: Dibromofluoromethane	53.05	0	50	0	106	71 - 128			
Surr: Toluene-d8	49.47	0	50	0	98.9	73 - 127			

MS	Sample ID: HS17051166-01MS	Units: ug/Kg		Analysis Date: 24-May-2017 23:20					
Client ID:	Run ID: VOA5_295272	SeqNo: 4099779		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	50.39	4.9	49	0	103	79 - 122			
Ethylbenzene	48.24	4.9	49	0	98.5	80 - 122			
Toluene	48.32	4.9	49	0	98.6	79 - 120			
Xylenes, Total	141.9	4.9	147	0	96.5	79 - 123			
Surr: 1,2-Dichloroethane-d4	48.59	0	49	0	99.2	70 - 128			
Surr: 4-Bromofluorobenzene	49.49	0	49	0	101	73 - 126			
Surr: Dibromofluoromethane	50.86	0	49	0	104	71 - 128			
Surr: Toluene-d8	48.8	0	49	0	99.6	73 - 127			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
 Project: Chevron Ranglely CS47
 WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: R295272		Instrument: VOA5		Method: SW8260						
MSD		Sample ID: HS17051166-01MSD		Units: ug/Kg		Analysis Date: 24-May-2017 23:43				
Client ID:		Run ID: VOA5_295272		SeqNo: 4099780		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	50.86	4.9	49	0	104	79 - 122	50.39	0.914	30	
Ethylbenzene	48.03	4.9	49	0	98.0	80 - 122	48.24	0.451	30	
Toluene	48.36	4.9	49	0	98.7	79 - 120	48.32	0.0999	30	
Xylenes, Total	144.5	4.9	147	0	98.3	79 - 123	141.9	1.82	30	
Surr: 1,2-Dichloroethane-d4	48.58	0	49	0	99.1	70 - 128	48.59	0.0245	30	
Surr: 4-Bromofluorobenzene	49.93	0	49	0	102	73 - 126	49.49	0.898	30	
Surr: Dibromofluoromethane	51.18	0	49	0	104	71 - 128	50.86	0.616	30	
Surr: Toluene-d8	49.39	0	49	0	101	73 - 127	48.8	1.2	30	
The following samples were analyzed in this batch: HS17051096-02 HS17051096-04										

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: 116607		Instrument: UV-2450		Method: SW7196						
MBLK	Sample ID: MBLK-116607	Units: mg/kg		Analysis Date: 26-May-2017 15:22						
Client ID:	Run ID: UV-2450_295458	SeqNo: 4103797		PrepDate: 26-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	< 0.300	2.00								
LCS	Sample ID: LCS-116607	Units: mg/kg		Analysis Date: 26-May-2017 15:22						
Client ID:	Run ID: UV-2450_295458	SeqNo: 4103796		PrepDate: 26-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	10.76	2.00	10	0	108	80 - 120				
MS	Sample ID: HS17051011-02MS	Units: mg/kg		Analysis Date: 26-May-2017 15:22						
Client ID:	Run ID: UV-2450_295458	SeqNo: 4103794		PrepDate: 26-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	10.63	1.99	9.953	0.07949	106	75 - 125				
MSD	Sample ID: HS17051011-02MSD	Units: mg/kg		Analysis Date: 26-May-2017 15:22						
Client ID:	Run ID: UV-2450_295458	SeqNo: 4103795		PrepDate: 26-May-2017		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	10.56	1.98	9.921	0.07949	106	75 - 125	10.63	0.697	20	
The following samples were analyzed in this batch:										
HS17051096-01		HS17051096-02		HS17051096-03		HS17051096-04				
HS17051096-05		HS17051096-06		HS17051096-07						

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: R295311		Instrument: WetChem_HS		Method: SW9045B	
DUP	Sample ID: HS17051254-03DUP	Units: pH Units		Analysis Date: 25-May-2017 13:30	
Client ID:	Run ID: WetChem_HS_295311	SeqNo: 4100527		PrepDate:	DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC Control Limit RPD Ref Value %RPD RPD Limit Qual
pH	8.24	0.100			8.26 0.242 10
Temp Deg C @pH	21	0			21 0 10
The following samples were analyzed in this batch:					
HS17051096-01		HS17051096-02		HS17051096-03	
HS17051096-05		HS17051096-06		HS17051096-07	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: R295393		Instrument: Balance1		Method: ASTM D2216					
DUP	Sample ID: HS17051036-03DUP	Units: wt%		Analysis Date: 26-May-2017 10:42					
Client ID:	Run ID: Balance1_295393	SeqNo: 4102341		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Percent Moisture	33.3	0.0100					33.7	1.19	20
------------------	------	--------	--	--	--	--	------	------	----

The following samples were analyzed in this batch:

HS17051096-01	HS17051096-02	HS17051096-03	HS17051096-04
HS17051096-05	HS17051096-06	HS17051096-07	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Ranglely CS47
WorkOrder: HS17051096

QC BATCH REPORT

Batch ID: R295544		Instrument: WetChem_HS		Method: LaDNR-29B EC					
DUP	Sample ID: HS17051096-07DUP	Units: mmhos/cm @25° C			Analysis Date: 30-May-2017 15:15				
Client ID: SB05 (8-10)	Run ID: WetChem_HS_295544		SeqNo: 4107074		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Electrical Conductivity, 1:1 aqueous	7.83	0.0100					8.98	13.7	20
The following samples were analyzed in this batch:									
		HS17051096-01	HS17051096-02		HS17051096-03		HS17051096-04		
		HS17051096-05	HS17051096-06		HS17051096-07				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Stantec
Project: Chevron Rangley CS47
WorkOrder: HS17051096

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	17-027-0	27-Mar-2018
California	2919 2016-2018	31-Jul-2018
Illinois	004112	09-May-2018
Kansas	E-10352 2016-2017	31-Jul-2017
Louisiana	03087 2016-2017	30-Jun-2017
North Carolina	624-2017	31-Dec-2017
Oklahoma	2016-122	31-Aug-2017
Texas	T104704231-17-18	30-Apr-2018

Client: Stantec
Project: Chevron Ranglely CS47
Work Order: HS17051096

SAMPLE TRACKING

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS17051096-01	SB03 (9-11)	Login	5/22/2017 1:21:07 PM	RPG	VOA081
HS17051096-01	SB03 (9-11)	Login	5/22/2017 1:21:07 PM	RPG	SPA081
HS17051096-01	SB03 (9-11)	Login	5/22/2017 1:21:07 PM	RPG	SPA081
HS17051096-01	SB03 (9-11)	Login	5/22/2017 1:21:07 PM	RPG	VOA069
HS17051096-01	SB03 (9-11)	Login	5/22/2017 1:21:07 PM	RPG	VOA069
HS17051096-02	SB05 (4-4.5)	Login	5/22/2017 1:26:46 PM	RPG	VOA081
HS17051096-02	SB05 (4-4.5)	Login	5/22/2017 1:26:46 PM	RPG	SPA081
HS17051096-02	SB05 (4-4.5)	Login	5/22/2017 1:26:46 PM	RPG	SPA081
HS17051096-02	SB05 (4-4.5)	Login	5/22/2017 1:26:46 PM	RPG	VOA069
HS17051096-02	SB05 (4-4.5)	Login	5/22/2017 1:26:46 PM	RPG	VOA069
HS17051096-03	SB05 (11-13)	Login	5/22/2017 1:26:47 PM	RPG	VOA081
HS17051096-03	SB05 (11-13)	Login	5/22/2017 1:26:47 PM	RPG	SPA081
HS17051096-03	SB05 (11-13)	Login	5/22/2017 1:26:47 PM	RPG	SPA081
HS17051096-03	SB05 (11-13)	Login	5/22/2017 1:26:47 PM	RPG	VOA069
HS17051096-03	SB05 (11-13)	Login	5/22/2017 1:26:47 PM	RPG	VOA069
HS17051096-04	SB05 (18-20)	Login	5/22/2017 1:26:48 PM	RPG	VOA081
HS17051096-04	SB05 (18-20)	Login	5/22/2017 1:26:48 PM	RPG	SPA081
HS17051096-04	SB05 (18-20)	Login	5/22/2017 1:26:48 PM	RPG	SPA081
HS17051096-04	SB05 (18-20)	Login	5/22/2017 1:26:48 PM	RPG	VOA069
HS17051096-04	SB05 (18-20)	Login	5/22/2017 1:26:48 PM	RPG	VOA069
HS17051096-05	SB06 (4-5)	Login	5/22/2017 1:26:48 PM	RPG	VOA081
HS17051096-05	SB06 (4-5)	Login	5/22/2017 1:26:48 PM	RPG	SPA081
HS17051096-05	SB06 (4-5)	Login	5/22/2017 1:26:48 PM	RPG	SPA081
HS17051096-05	SB06 (4-5)	Login	5/22/2017 1:26:48 PM	RPG	VOA069
HS17051096-05	SB06 (4-5)	Login	5/22/2017 1:26:48 PM	RPG	VOA069
HS17051096-06	SB06 (7-10)	Login	5/22/2017 1:26:49 PM	RPG	VOA081
HS17051096-06	SB06 (7-10)	Login	5/22/2017 1:26:49 PM	RPG	SPA081
HS17051096-06	SB06 (7-10)	Login	5/22/2017 1:26:49 PM	RPG	SPA081
HS17051096-06	SB06 (7-10)	Login	5/22/2017 1:26:49 PM	RPG	VOA069
HS17051096-06	SB06 (7-10)	Login	5/22/2017 1:26:49 PM	RPG	VOA069
HS17051096-07	SB05 (8-10)	Login	5/22/2017 1:37:59 PM	RPG	VOA081
HS17051096-07	SB05 (8-10)	Login	5/22/2017 1:37:59 PM	RPG	SPA081
HS17051096-07	SB05 (8-10)	Login	5/22/2017 1:37:59 PM	RPG	SPA081
HS17051096-07	SB05 (8-10)	Login	5/22/2017 1:37:59 PM	RPG	VOA069
HS17051096-07	SB05 (8-10)	Login	5/22/2017 1:37:59 PM	RPG	VOA069

Sample Receipt Checklist

Client Name: Stantec Denver
Work Order: HS17051096

Date/Time Received: **20-May-2017 09:55**
Received by: **Jared R. Makan**

Checklist completed by: Raegen Giga 22-May-2017
eSignature Date

Reviewed by: Dane J. Wacasey 24-May-2017
eSignature Date

Matrices: **soil**Carrier name: **ALS.HS**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
TX1005 solids received in hermetically sealed vials?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

Temperature(s)/Thermometer(s): 1.6c/2.2c uc/c IR 20

Cooler(s)/Kit(s): 24468

Date/Time sample(s) sent to storage: 05/20/2017 14:00

Water - VOA vials have zero headspace? Yes ☐ No ☐ No VOA vials submitted ☒

Water - pH acceptable upon receipt? Yes ☐ No ☐ N/A ☒

pH adjusted? Yes ☐ No ☐ N/A ☒

pH adjusted by:

Login Notes: Methanol vial SB03 (9-11) COC = 14:05 Label = 14:02
SB05 (4-4.5) COC = 10:00 Label = 09:23 (all Jars)
Sample SB05 (8-10 @ 10:00) not listed on COC - logged for all tests. Trip Blank not listed on COC; placed on hold.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:



Cincinnati, OH
+1 513 733 5336

Fort Collins, CO
+1 970 490 1511

Everett, WA
+1 425 356 2600

Holland, MI
+1 616 399 6070

Chain of Custody Form

Page ____ of ____

COC ID: 158849

HS17051096

Stantec

Chevron Rangley CS47

ALS Project Manager:



Customer Information				Project Information			
Purchase Order		Project Name	Chevron Rangley CS47	A	5035/8260 - BTEX		
Work Order		Project Number		B	5035/8015 - TPH-GRO		
Company Name	Stantec	Bill To Company	Stantec	C	8015 - TPH-DRO		
Send Report To	Christopher Beall	Invoice Attn		D	8270 - PAHs		
Address	2000 South Colorado Boulevard	Address	2000 South Colorado Boulevard	E	6020/7471 - Total Metals		
City/State/Zip	Denver, CO 80222	City/State/Zip	Denver CO 80222	F	7196 - Hexavalent Cr / Trivalent Cr		
Phone	(303) 285-4541	Phone	(303) 285-4541	G	La29B - E.C., pH, SAR, True Tot. Ba, H2O sol. B		
Fax		Fax		H	Moist%		
e-Mail Address	Christopher.Beall@stantec.com	e-Mail Address		I			
				J			

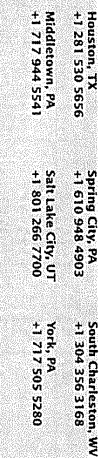
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SB03 (9-11)	5/17/17	1405	Soil		8	X	X	X	X	X	X	X	X			
2	SB05 (4-7.5)	5/18/17	1000			8	X	X	X	X	X	X	X	X			
3	SB05 (11-13)		1015			8	X	X	X	X	X	X	X	X			
4	SB05 (18-20)		1040			8	X	X	X	X	X	X	X	X			
5	SB06 (4-5)		1110			8	X	X	X	X	X	X	X	X			
6	SB06 (7-10)		1130			8	X	X	X	X	X	X	X	X			
7																	
8																	
9																	
0																	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
<i>Chris Beall / Chris Beall</i>				<input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour					
Relinquished by: <i>Chris Beall</i>		Date: 5/18/17	Time: 1712	Received by: <i>MM</i>		Notes: *SEE Attached Table 910 to ensure all PAH metals are analyzed			
Relinquished by: <i>MM</i>		Date: 5/18/17	Time: 7800	Received by (Laboratory): <i>SM</i>		Cooler ID: 24468		Cooler Temp: 1.6	
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		QC Package: (Check One Box Below)		Level II Std QC <input checked="" type="checkbox"/>	
								Level III Std QC/Raw Data <input type="checkbox"/>	
								Level IV SW846/CLP <input type="checkbox"/>	
								Other <input type="checkbox"/>	
								TRRP Checklist <input type="checkbox"/>	
								TRRP Level IV <input type="checkbox"/>	

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₃ 6-NaHSO₄ 7-Other 8-4°C 9-5035

- Notes:
- Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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York, PA
+1 717 505 5280

Parameter/Method Request for Analysis

Page 56 of 57

Sample(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)				Results Due Date:	
<i>[Signature]</i>				<input checked="" type="checkbox"/> STD 10 WK Days	<input type="checkbox"/> 5WK Days	<input type="checkbox"/> 2WK Cys	<input type="checkbox"/> 2d Hour		
Requisitioned by:	Date: <i>8/19/12</i>	Time: <i>1212</i>	Received by:	<i>[Signature]</i>					
Requisitioned by:	Date:	Time:	Received by (Laboratory):	Notes: <i>17-18 months old - Analyzed</i>					
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	Cooler ID	Cooler Temp.	QC-Package: (Check One Box Below)			
				<input checked="" type="checkbox"/>	<input type="checkbox"/>	Level III Bio Contain. Die Level IV SYMPTIC			
Preservative Key: 1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-Na ₂ S ₂ O ₈ 6-NaHSO ₄ 7-Other 8-4°C 9-50/35				Level III Bio Contain. Die Level IV SYMPTIC					


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2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
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MAY 20 2017

	ALS Environmental	CUSTOMER		Signature <i>RW</i>
	3352 128th Avenue	Time: 1:30		
	Harland, Michigan 49424	Name: <i>MS</i>		
	Tel. +1 616 399 6070	Company: <i>ALS</i>		
	Fax. +1 616 399 6185	Date: MAY 20		

24468

FedEx
TRK# 0221 6786 7205 5771
SATURDAY 12:00P
PRIORITY OVERNIGHT
MAY 20 2017
X0 SGRA *24468* **77099**
TX-US
IAH

APPENDIX D

**POTENTIOMETRIC SURFACE AND GROUNDWATER ELEVATIONS
MAP AND LABORATORY RESULTS 2ND QUARTER 2017 MAP**



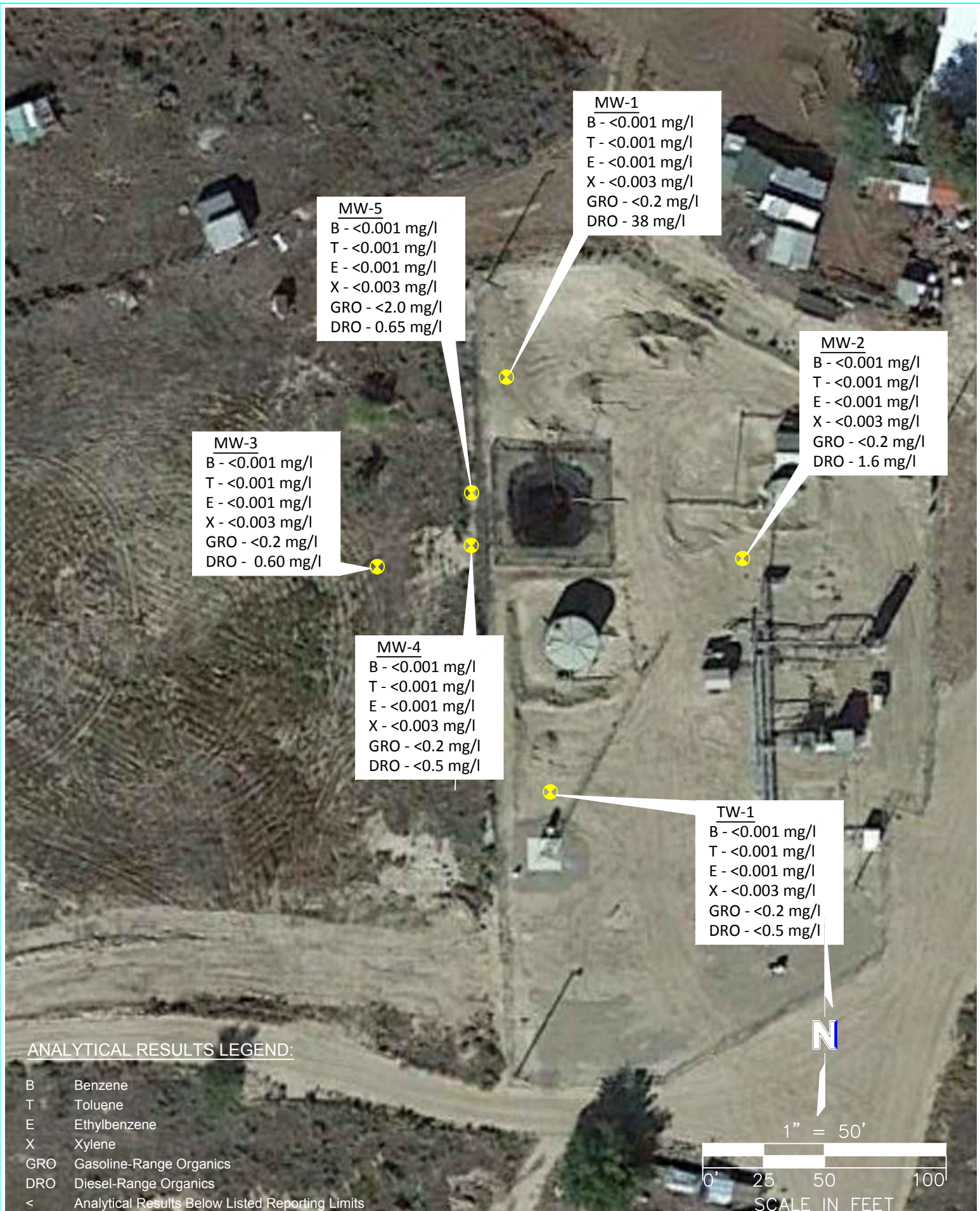
PROJECT NO: 017-0501
 DRAWN BY: RAS
 DATE: 6/12/2017

Potentiometric Surface and Groundwater
 Elevations Map
 CS-47 - Q2 2017
 Rio Blanco County, CO

OLSSON
 ASSOCIATES

760 Horizon Drive, Suite 102
 Grand Junction, CO 81506
 TEL 970.263.7800
 FAX 970.263.7456

Figure
2



PROJECT NO: 017-0501
DRAWN BY: RAS
DATE: 6/12/2017

Laboratory Results - 2nd Quarter 2017
CS-47
Rio Blanco County, CO

OLSSON
ASSOCIATES

760 Horizon Drive, Suite 102
Grand Junction, CO 81506
TEL 970.263.7800
FAX 970.263.7456

Figure
3

APPENDIX E

EDR AERIAL PHOTO DECADE PACKAGE



Rangely-CS 47

West Rodeo Road/Bronco Road

Rangely, CO 81648

Inquiry Number: 4941822.1

May 19, 2017

The EDR Aerial Photo Decade Package



6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

05/19/17

Site Name:

Rangely-CS 47
West Rodeo Road/Bronco Roa
Rangely, CO 81648
EDR Inquiry # 4941822.1

Client Name:

Stantec
2000 South Colorado Blvd
Denver, CO 80222
Contact: Christopher Beall



Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

<u>Year</u>	<u>Scale</u>	<u>Details</u>	<u>Source</u>
2011	1"=500'	Flight Year: 2011	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
1999	1"=500'	Flight Date: September 05, 1999	USGS
1993	1"=500'	Acquisition Date: July 01, 1993	USGS/DOQQ
1988	1"=500'	Flight Date: September 17, 1988	USGS
1983	1"=500'	Flight Date: September 11, 1983	USGS
1962	1"=750'	Flight Date: July 15, 1962	USGS

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INQUIRY #: 4941822.1

YEAR: 2011

— = 500'





INQUIRY #: 4941822.1

YEAR: 2009

— = 500'





INQUIRY #: 4941822.1

YEAR: 2006

— = 500'





INQUIRY #: 4941822.1

YEAR: 2005

— = 500'





INQUIRY #: 4941822.1

YEAR: 1999

— = 500'





INQUIRY #: 4941822.1

YEAR: 1993

— = 500'





INQUIRY #: 4941822.1

YEAR: 1988

— = 500'





INQUIRY #: 4941822.1

YEAR: 1983

1" = 500'





INQUIRY #: 4941822.1

YEAR: 1962

— = 750'

